



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1968 KOOLADE .069 PAGE 129

L T4RUPT PROGRAM

USER-S PAGE NO. 1 E0 S3

0001			12,2000		BANK 12
0002	REF	1	06,2000		SETLOC T4RUP
0003			06,2000		BANK
0004	REF	1			COUNT 06/T4RPT
0005	REF	1	06,2000	54 016 1	T4RUPT TS BANKRUPT
0006			06,2001	0 0008 1	EXTEND
0007	REF	1	06,2002	22 012 1	QXCH CRUPT
0008	REF	2 LAST 128	06,2003	11=302 0	CCS DSRUPTSW
0009	REF	1	06,2004	1 2010 0	TCP NORMT4 +1
0010	REF	2 LAST 129	06,2005	1 2007 0	TCP NORMT4
0011	REF	1	06,2006	1 2138 0	TCP QUIKOSP
0012	REF	1	06,2007	3 4716 0	NORMT4 CAP SEVEN
0013	REF	1	06,2010	54 070 1	TS RUPTREG1
0014	REF	3 LAST 129	06,2011	55=302 0	TS DSRUPTSW
0015	REF	1			COUNT 02/T4RPT

GOES 7(-1)0 AROUND AND AROUND

0016 REF 1 7711 74K = HIGH4
R0017 RELTAB IS A PACKED TABLE. RELAYWORD CODE IN UPPER 4 BITS, RELAY CODE
R0018 IN LOWER 5 BITS.

0019			4072		BLOCK 02
0020	REF	1	4000		SETLOC FFTAG12
0021			4072		BANK
0022			4072	04025 1	RELTAB OCT 04025
0023			4073	10003 0	OCT 10003
0024			4074	14031 0	OCT 14031
0025			4075	20033 0	OCT 20033
0026			4076	24017 1	OCT 24017
0027			4077	30038 1	OCT 30038
0028			4100	34034 1	OCT 34034
0029			4101	40023 1	OCT 40023
0030			4102	44035 1	OCT 44035
0031			4103	50037 0	OCT 50037
0032			4104	54000 0	OCT 54000
0033			4105	60000 1	RELTAB11 OCT 60000



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1968 KOOLADE .069 PAGE 130

L T4RUPT PROGRAM

USER'S PAGE NO. 2 E0 S3

P0034 SWITCHED-BANK PORTION.

0035					12,2000				BANK 12
0036	REF	2	LAST	129	06,2000				SETLOC T4RUP
0037					06,2012				BANK
0038	REF	2	LAST	129 TO 129'	10	10*			COUNT 06/T4RPT
0039	REF	1			06,2012	11*036 1	CDRVE	CCS	DSPTAB +11D
0040	REF	1			06,2013	0 2063 0		TC	DSPOUT
0041	REF	2	LAST	130	06,2014	0 2063 0		TC	DSPOUT
0042	REF	2	LAST	130	06,2015	57*036 0		XCH	DSPTAB +11D
0043	REF	1			06,2016	7 4372 1		MASK	LOW11
0044	REF	3	LAST	130	06,2017	55*036 1		TS	DSPTAB +11D
0045	REF	1			06,2020	6 4105 1		AD	RELTAB11
0046					06,2021	0 0006 1		EXTEND	
0047	REF	1			06,2022	01 010 1		WRITE	OUT0
0048	REF	1			06,2023	0 2071 0		TC	HANG20



L T4RUPT PROGRAM

USBRAS PAGE NO. 3 E0 S3

P0049 DSPOUT PROGRAM. PUTS OUT DISPLAYS.

0050	REF	1		06,2024	55=016 0	DSPOUTSB	TS	NQUT
0051	REF	1		06,2025	4 4714 0		CS	ZERO
0052	REF	1		06,2026	54 073 1		TS	DSRUPTM
0053	REF	1		06,2027	56 776 1		XCH	DSPCNT
0054	REF	1		06,2030	6 4713 0		AD	NEGO
0055	REF	2	LAST 131	06,2031	54 776 0		TS	DSPCNT
0056	REF	3	LAST 131	06,2032	50 776 1	DSPSCAN	INDEX	DSPCNT
0057	REF	4	LAST 130	06,2033	11=023 0		CCS	DSPTAB
0058	REF	4	LAST 131	06,2034	10 776 0		CCS	DSPCNT
0059	REF	1		06,2035	1 2030 1		TCF	DSPSCAN -2
0060	REF	1		06,2036	1 2047 1		TCF	DSPLAY
0061				06,2037	00012 1	TABLNT	OCT	12
0062	REF	2	LAST 131	06,2040	10 073 1		CCS	DSRUPTM
0063				06,2041	37764 0	120MRUPT	DEC	16372
0064	REF	2	LAST 131	06,2042	55=016 0		TS	NQUT
0065	REF	2	LAST 39	06,2043	0 0002 0		TC	0
0066	REF	3	LAST 131	06,2044	54 073 1		TS	DSRUPTM
0067	REF	1		06,2045	3 2037 1	CAP	TABLNT	
0068	REF	2	LAST 131	06,2046	1 2031 0		TCF	DSPSCAN -1
0069	REF	1		06,2047	6 4712 1	DSPLAY	AD	ONE
0070	REF	5	LAST 131	06,2050	50 776 1		INDEX	DSPCNT
0071	REF	5	LAST 131	06,2051	55=023 0		TS	DSPTAB
0072	REF	2	LAST 130	06,2052	7 4372 1		MASK	LOW11
0073	REF	4	LAST 131	06,2053	54 073 1		TS	DSRUPTM
0074	REF	1		06,2054	3 4384 1		CAP	H15
0075	REF	6	LAST 131	06,2055	50 776 1		INDEX	DSPCNT
0076	REF	1		06,2056	7 4072 1		MASK	RELTAB
0077	REF	5	LAST 131	06,2057	6 0073 0		AD	DSRUPTM
0078				06,2060	0 0006 1		EXTEND	
0079	REF	2	LAST 130	06,2061	01 010 1		WRITE	QUT0
0080	REF	1		06,2062	1 6706 1		TCF	Q+1
0081	REF	1		06,2063	10 101 0	DSPOUT	CCS	FLAGWRD5
0082	REF	2	LAST 131	06,2064	3 4714 1		CAP	ZERO
0083	REF	1		06,2065	1 2132 1		TCF	NODSPOUT
0084	REF	3	LAST 131	06,2066	11=016 0		CCS	NQUT
0085	REF	1		06,2067	0 2024 0		TC	DSPOUTSB
0086	REF	2	LAST 131	06,2070	1 2132 1		TCF	NODSPOUT
0087	REF	1		06,2071	4 2173 1	HANG20	CS	11,14,9
0088	REF	4	LAST 129	06,2072	27=302 0		ADS	DSRUPTSW
0089	REF	1		06,2073	3 7700 1		CAP	20MRUPT
0090	REF	1		06,2074	54 027 0	SETTIME4	TS	TIME4

SET TO -0 FOR 1ST PASS THRU DSPTAB

TO PREVENT +0

IF DSPTAB ENTRY +, SKIP
IF DSPCNT +, AGAIN
IF DSPTAB ENTRY -, DISPLAY
DEC 10 LENGTH OF DSPTAB
IF DSRUPTM=+0, 2ND PASS THRU DSPTAB
(DSPCNT = 0). +0 INTO NQUT.

IF DSRUPTM=-0, 1ST PASS THRU DSPTAB
(DSPCNT=0). +0 INTO DSRUPTM. PASS AGAIN

REPLACE POSITIVELY
REMOVE BITS 12 TO 15

PICK UP BITS 12 TO 15 OF RELTAB ENTRY

WRITE CHANNEL 10
***NORMAL RETURN SKIPS ONE
DONT DISPLAY UNLESS DSKY FLAG ON.

NO DISPLAY REQUESTS



L T4RUPT PROGRAM

USER'S PAGE NO. 4 E0 S3

P0091 THE STATUS OF THE PROCEED PUSHBUTTON IS MONITORED EVERY 120 MILLISECONDS VIA THE CHANNEL 32 BIT 14 INBIT.
R0093 THE STATE OF THIS INBIT IS COMPARED WITH ITS STATE DURING THE PREVIOUS T4RUPT AND IS PROCESSED AS FOLLOWS.

R0095 IF PREV ON AND NOW ON - BYPASS
R0096 IF PREV ON AND NOW OFF - UPDATE IMODES33
R0097 IF PREV OFF AND NOW ON - UPDATE IMODES33 AND PROCESS VIA PINBALL
R0098 IF PREV OFF AND NOW OFF - BYPASS

R0099 THE LOGIC EMPLOYED REQUIRES ONLY 9 MCT (APPROX. 108 MICROSECONDS) OF COMPUTER TIME WHEN NO CHANGES OCCUR.

0101	RESP	1		06,2075	3 1321 0	PROCEED CA	IMODES33	MONITOR FOR PROCEED BUTTON	
0102				06,2076	0 0006 1	EXTEND			
0103	RESP	1		06,2077	06 032 0	RXOR	CHAN32	CHECK IF BIT 14 DIFFERENT	
0104	RESP	10	LAST	63	06,2100	7 4675 0	MASK	BIT14	
0105				06,2101	0 0006 1	EXTEND			
0106	RESP	1		06,2102	1 2116 1	BZF	T4JUMP	NO CHANGE	
0107	RESP	2	LAST	132	06,2103	23=321 0	LXCH	IMODES33	
0108				06,2104	0 0006 1	EXTEND			
0109	RESP	1		06,2105	06 001 0	RXOR	LOHAN		
0110	RESP	3	LAST	132	06,2106	55=321 1	TS	IMODES33	UPDATE IMODES33
0111	RESP	11	LAST	132	06,2107	7 4675 0	MASK	BIT14	
0112	RESP	2	LAST	80	06,2110	10 000 0	CCS	A	
0113	RESP	2	LAST	132	06,2111	1 2116 1	TCF	T4JUMP	WAS ON - NOW OFF
0114	RESP	1		06,2112	3 4371 0	CAP	CHRPRIO	WAS OFF - NOW ON	
0115	RESP	1		06,2113	0 5027 1	TC	NOVAC		
0116	RESP	1		0777		BRANK=	DSPCOUNT		
0117	RESP	1		06,2114	03353 1	ZCADR	PROCKEY		
0117	RESP	1		06,2115	60101 1				

L T4RUPT PROGRAM

USER=S PAGE NO. 5 E0 S3

P0116 JUMP TO APPROPRIATE ONCE-PER SECOND (.96 SEC ACTUALLY) ACTIVITY

0119	REF	2	LAST	129	06,2116	50 070 0	T4JUMP	INDEX	RUPTRG1	
0120					06,2117	1 2120 1		TCF	+1	
0121	REF	1			06,2120	1 2130 0		TCF	OPTTEST	
0122	REF	1			06,2121	1 2765 0		TCF	OPTMON	
0123	REF	1			06,2122	1 2174 0		TCF	IMMON	
0124	REF	3	LAST	128	06,2123	1 5222 1		TCF	RESUME	
0125	REF	2	LAST	133	06,2124	1 2130 0		TCF	OPTTEST	
0126	REF	2	LAST	133	06,2125	1 2765 0		TCF	OPTMON	
0127	REF	2	LAST	133	06,2126	1 2174 0		TCF	IMMON	
0128	REF	4	LAST	133	06,2127	1 5222 1		TCF	RESUME	
0129	REF	1			06,2130	0 4633 0	OPTTEST	TC	IBNCALL	
0130	REF	1			06,2131	20000 0		CADR	OPTDRIVE	
0131	REF	1			7700		20MRUPT	=	OCT37776	(DEC 16382)
0132					06,2132	0 0006 1	NODSPOUT	EXTEND		TURN OFF RELAYS
0133	REF	3	LAST	131	06,2133	01 010 1		WRITE	QUIT0	
0134	REF	1			06,2134	3 2041 0		CAP	120MRUPT	SET FOR NEXT DRIVE
0135	REF	1			06,2135	1 2074 1		TCF	SETTIME4	
0136	REF	12	LAST	132	06,2136	3 4675 1	QUIKDSP	CAP	BIT14	
0137	REF	5	LAST	131	06,2137	7 1302 0		MASK	DSRUPTSW	
0138					06,2140	0 0006 1		EXTEND		
0139	REF	1			06,2141	1 2167 1		BZF	QUIKOFF	WROTE LAST TIME, NOW TURN OFF RELAYS.
01395	REF	4	LAST	131	06,2142	11*016 0		CCS	NOUT	
0140	REF	2	LAST	131	06,2143	0 2024 0		TC	DSPOUTSB	
0141	REF	1			06,2144	1 2154 1		TCF	NODSPY	NOUT=0 OR BAD RETURN FROM DSPOUTSB
0142	REF	13	LAST	133	06,2145	4 4675 0		CS	BIT14	GOOD RETURN (WE DISPLAYED SOMETHING)
0143	REF	6	LAST	133	06,2146	27*302 0	QUIKRUPT	ADS	DSRUPTSW	
0144	REF	2	LAST	131	06,2147	3 7700 1		CAP	20MRUPT	
0145	REF	2	LAST	131	06,2150	54 027 0		TS	TIME4	
0146	REF	11	LAST	62	06,2151	3 4702 0		CAP	BIT9	
0147	REF	7	LAST	133	06,2152	27*302 0		ADS	DSRUPTSW	
0148	REF	5	LAST	133	06,2153	0 5222 0		TC	RESUME	
0149					06,2154	0 0006 1	NODSPY	EXTEND		
0150	REF	4	LAST	133	06,2155	01 010 1		WRITE	QUIT0	
0151	REF	3	LAST	133	06,2156	3 7700 1	SYNCT4	CAP	20MRUPT	
0152	REF	3	LAST	133	06,2157	26 027 0		ADS	TIME4	
0153	REF	12	LAST	133	06,2160	3 4702 0		CAP	BIT9	



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 28, 1966 KOOLADE .069 PAGE 134

L T4RUPT PROGRAM

USER=3 PAGE NO. 6 E0 S3

0154	REF	6	LAST	133	06,2161	27*302 0	ADS	DSRUPTSW
0155	REF	9	LAST	134	06,2162	11*302 0	CCS	DSRUPTSW
0156	REF	6	LAST	133	06,2163	0 5222 0	TC	RESUME
0157					06,2164	37737 0	OCT37737	OCT 37737
0158	REF	1			06,2165	0 2156 1	TC	SYNCT4
0159	REF	7	LAST	134	06,2166	0 5222 0	TC	RESUME
0160					06,2167	0 0008 1	QUIKOPP	EXTEND
0161	REF	5	LAST	133	06,2170	01 010 1	WRITE	OUT0
0162	REF	14	LAST	133	06,2171	3 4875 1	CAP	BIT14
0163	REF	1			06,2172	1 2146 1	TOP	QUIKRUPT
0164					06,2173	22400 0	11,14,9	OCT 22400

RESET DSRUPTSW TO SEND DISPLAY NEXT PASS



L T4RUPT PROGRAM

USER=S PAGE NO. 7 E0 S3

R0165 PROGRAM NAME' IMUMON

R0166 FUNCTIONAL DESCRIPTION' THIS PROGRAM IS ENTERED EVERY 480 MS. IT DETECTS CHANGES OF THE IMU STATUS BITS IN
R0168 CHANNEL 30 AND CALLS THE APPROPRIATE SUBROUTINES. THE BITS PROCESSED AND THEIR RELEVANT SUBROUTINES ARE'

R0170	FUNCTION	BIT	SUBROUTINE CALLED
R0171	-----	---	-----
R0172	TEMP IN LIMITS	15	TLIM
R0173	ISS TURN-ON REQUEST	14	ITURNON
R0174	IMU FAIL	13	IMUFAIL (SETISSW)
R0175	IMU CDU FAIL	12	ICDUFAIL (SETISSW)
R0176	IMU CAGE	11	IMUCAGE
R0177	IMU OPERATE	9	IMUOP

R0178 THE LAST SAMPLED STATE OF THESE BITS IS LEFT IN IMODES30. ALSO, EACH SUBROUTINE CALLED FINDS THE NEW
R0180 VALUE OF THE BIT IN A, WITH Q SET TO THE PROPER RETURN LOCATION, NXTIFAIL.

R0182 CALLING SEQUENCE' T4RUPT EVERY 480 MILLISECONDS.

R0183 JOBS OR TASKS INITIATED' NONE.

R0184 SUBROUTINES CALLED' TLIM, ITURNON, SETISSW, IMUCAGE, IMUOP.

R0185 ERASABLE INITIALIZATION'

R0186 FRESH START OR RESTART WITH NO GROUPS ACTIVE' C(IMODES30) = OCT 37411.

R0188 RESTART WITH ACTIVE GROUPS' C(IMODES30) = (B(IMODES30)AND(OCT 00035)) PLUS OCT 37400.
R0190 THIS LEAVES IMU FAIL BITS INTACT.

R0191 ALARMS' NONE.

R0192 EXIT' TNONTEST.

R0193 OUTPUT' UPDATED IMODES30 WITH CHANGES PROCESSED BY APPROPRIATE SUBROUTINE.

0195	REF	1		06,2174	3 1320 1	IMUMON	CA	IMODES30	SEE IF THERE HAS BEEN A CHANGE IN THE
0196				06,2175	0 0006 1		EXTEND		RELEVANT BITS OF CHAN 30.
0197	REF	1		06,2176	06 030 1		RXOR	CHAN30	CHECK IF BITS 9,11-15 CHANGED
0198	REF	1		06,2177	7 2743 1		MASK	30RDMSK	
0199				06,2200	0 0006 1		EXTEND		
0200	REF	1		06,2201	1 2231 1		BZF	TNONTEST	NO CHANGE IN STATUS.
0201	REF	3	LAST	133	06,2202	54 070 1	TS	RUPTRG1	SAVE BITS WHICH HAVE CHANGED.
0202	REF	2	LAST	135	06,2203	23*320 1	LXCH	IMODES30	UPDATE IMODES30.
0203					06,2204	0 0006 1	EXTEND		
0204	REF	2	LAST	132	06,2205	06 001 0	RXOR	LCHAN	
0205	REF	3	LAST	135	06,2206	55*320 0	TS	IMODES30	
0206	REF	2	LAST	131	06,2207	4 4712 0	CS	ONE	
0207	REF	4	LAST	135	06,2210	56 070 0	XCH	RUPTRG1	
0208					06,2211	0 0006 1	EXTEND		

L T4RUPT PROGRAM

USER=5 PAGE NO. 6 E0 S3

0209	REF	1		06,2212	6 2507 1	BZMP	TLIM	CHANGE IN IMU TEMP.
0210	REF	1		06,2213	1 2215 1	TCP	NXTIPBIT	BEGIN BIT SCAN.
0211	REF	3	LAST 135	06,2214	6 4712 1	-1	AD	ONE
0212	REF	5	LAST 135	06,2215	24 070 0	NXTIPBIT	INCR	RUPTRREG1
0213				06,2216	6 0000 1	+1	DOUBLE	
0214	REF	3	LAST 132	06,2217	54 000 0		TS	A
0215	REF	2	LAST 136	06,2220	1 2215 1		TCP	NXTIPBIT
								SKIP IF OVERFLOW.
								LOOK FOR BIT.
0216	REF	1		06,2221	56 071 1	XCH	RUPTRREG2	SAVE OVERFLOW-CORRECTED DATA.
0217	REF	6	LAST 136	06,2222	50 070 0	INDEX	RUPTRREG1	SELECT NEW VALUE OF THIS BIT.
0218	REF	15	LAST 134	06,2223	3 4675 1	CAP	BIT14	
0219	REF	4	LAST 135	06,2224	7 1320 0	MASK	IMODES30	
0220	REF	7	LAST 136	06,2225	50 070 0	INDEX	RUPTRREG1	
0221	REF	1		06,2226	0 2737 0	TC	IFAILJMP	
0222	REF	2	LAST 136	06,2227	10 071 0	NXTIFAIL	CCS	RUPTRREG2
0223	REF	3	LAST 136	06,2230	1 2214 0	TCP	NXTIPBIT	-1
								PROCESS ANY ADDITIONAL CHANGES.



L T4RUPT PROGRAM

USER'S PAGE NO. 9 E0 S3

P0224 PROGRAM NAME' TNONTEST.

R0225 FUNCTIONAL DESCRIPTION' THIS PROGRAM HONORS REQUESTS FOR ISS INITIALIZATION. ISS TURN-ON (CHANNEL 30 BIT 14)
R0227 AND ISS OPERATE (CHANNEL 30 BIT 9) REQUESTS ARE TREATED AS A PAIR AND PROCESSING TAKES PLACE .480 SECONDS
R0229 AFTER EITHER ONE APPEARS. THIS INITIALIZATION TAKES ON ONE OF THE FOLLOWING THREE FORMS'

R0231 1) ISS TURN-ON' IN THIS SITUATION THE COMPUTER IS OPERATING WHEN THE ISS IS TURNED ON. NOMINALLY,
R0233 BOTH ISS TURN-ON AND ISS OPERATE APPEAR. THE PLATFORM IS CAGED FOR 90 SECONDS AND THE ICDU'S ZEROED
R0235 SO THAT AT THE END OF THE PROCESS THE GIMBAL LOCK MONITOR WILL FUNCTION PROPERLY.

R0237 2) ICDU INITIALIZATION' IN THIS CASE THE COMPUTER WAS PROBABLY TURNED ON WITH THE ISS IN OPERATE OR
R0239 A FRESH START WAS DONE WITH THE ISS IN OPERATE. IN THIS CASE ONLY ISS OPERATE IS ON. THE ICDU'S ARE
R0241 ZEROED SO THE GIMBAL LOCK MONITOR WILL FUNCTION. AN EXCEPTION IS IF THE ISS IS IN GIMBAL LOCK AFTER
R0243 A RESTART, THE ICDU'S WILL NOT BE ZEROED.

R0244 3) RESTART WITH RESTARTABLE PROGRAM USING THE IMU' IN THIS CASE, NO INITIALIZATION TAKES PLACE SINCE
R0246 IT IS ASSUMED THAT THE USING PROGRAM DID THE INITIALIZATION AND THEREFORE T4RUPT SHOULD NOT INTERFERE.

R0248 IMODES30 BIT 7 IS SET = 1 BY THE FIRST BIT (CHANNEL 30 BIT 14 OR 9) WHICH ARRIVES. FOLLOWING THIS, TNONTEST IS
R0250 ENTERED, FINDS BIT 7 = 1 BUT BIT 8 = 0, SO IT SETS BIT 8 = 1 AND EXITS. THE NEXT TIME IT FINDS BIT 8 = 1 AND
R0252 PROCEEDS, SETTING BITS 8 AND 7 = 0. AT PROCTON, IF ISS TURN-ON REQUEST IS PRESENT, THE ISS IS CAGED (ZERO +
R0254 COARSE). IF ISS OPERATE IS NOT PRESENT PROGRAM ALARM 00213 IS ISSUED. AT THE END OF A 90 SECOND CAGE, BIT 2
R0256 OF IMODES30 IS TESTED. IF IT IS = 1, ISS TURN-ON WAS NOT PRESENT FOR THE ENTIRE 90 SECONDS. IN THAT CASE, IF
R0258 THE ISS TURN-ON REQUEST IS PRESENT THE 90 SECOND WAIT IS REPEATED, OTHERWISE NO ACTION OCCURS UNLESS A PROGRAM
R0260 WAS WAITING FOR THE INITIALIZATION IN WHICH CASE THE PROGRAM IS GIVEN AN IMUSTALL ERROR RETURN. IF THE DELAY
R0262 WENT PROPERLY, THE ISS DELAY OUTPUT IS SENT AND THE ICDU'S ZEROED. A TASK IS INITIATED TO REMOVE THE PIPA FAIL
R0264 INHIBIT BIT IN 10.24 SECONDS. IF A MISSION PROGRAM WAS WAITING IT IS INFORMED VIA ENDIMU.

R0266 AT PROCTON, IF ONLY ISS OPERATE IS PRESENT (OPONLY), THE CDU'S ARE ZEROED UNLESS THE PLATFORM IS IN COARSE
R0268 ALIGN (= GIMBAL LOCK HERE) OR A MISSION PROGRAM IS USING THE IMU (IMUSEFLG = 1).

R0270 CALLING SEQUENCE' T4RUPT EVERY 480 MILLISECONDS AFTER IMON.

R0271 JOBS OR TASKS INITIATED' 1) ENDINON, 90 SECONDS AFTER CAGING STARTED. 2) ISSUP, 4 SECONDS AFTER CAGING DONE.
R0273 3) PFAILQ, 10.24 SECONDS AFTER INITIALIZATION COMPLETED. 4) UNZ2, 320 MILLISECONDS AFTER ZEROING
R0275 STARTED.

R0276 SUBROUTINES CALLED' CAGESUB, CAGESUB2, ZEROICDU, ENDIMU, IMURAD, NOATTOFF, SETISSW, VARDELAY.

R0278 ERASABLE INITIALIZATION' SEE IMON.

R0279 ALARMS' PROGRAM ALARM 00213 IF ISS TURN-ON REQUESTED WITHOUT ISS OPERATE.

R0281 EXIT' ENDINON EXITS TO C33TEST. TASKS HAVING TO DO WITH INITIALIZATION EXIT AS FOLLOWS' MISSION PROGRAM
R0283 WAITING AND INITIALIZATION COMPLETE, EXIT TO ENDIMU, MISSION PROGRAM WAITING AND INITIALIZATION FAILED, EXIT TO
R0285 IMURAD, IMU NOT IN USE, EXIT TO TASKOVER.

R0286 OUTPUT' ISS INITIALIZED.

0287 REP 5 LAST 136 06,2231 4 1320 0 TNONTEST CS IMODES30 AFTER PROCESSING ALL CHANGES, SEE IF IT

L T4RUPT PROGRAM

USER=8 PAGE NO. 10 E0 S3

0286	REP	13	LAST	64	06,2232	7 4704 1	MASK	BIT7	IS TIME TO ACT ON A TURN-ON SEQUENCE.
0289	REP	4	LAST	136	06,2233	10 000 0	CCS	A	
0290	REP	1			06,2234	1 2367 0	TCP	C33TEST	NO - EXAMINE CHANNEL 33.
0291	REP	12	LAST	62	06,2235	3 4703 1	CAP	BIT8	SEE IF FIRST SAMPLE OR SECOND.
0292	REP	6	LAST	137	06,2236	7 1320 0	MASK	IMODES30	
0293	REP	5	LAST	138	06,2237	10 000 0	CCS	A	
0294	REP	1			06,2240	1 2244 0	TCP	PROCTNON	REACT AFTER SECOND SAMPLE.
0295	REP	13	LAST	138	06,2241	3 4703 1	CAP	BIT8	IF FIRST SAMPLE, SET BIT TO REACT NEXT
0296	REP	7	LAST	138	06,2242	27*320 0	ADS	IMODES30	TIME.
0297	REP	2	LAST	136	06,2243	1 2367 0	TCP	C33TEST	

R0296 PROCESS IMU TURN-ON REQUESTS AFTER WAITING 1 SAMPLE FOR ALL SIGNALS TO ARRIVE.

0300	REP	1			06,2244	4 2757 1	PROCTNON	CS	BIT8d6	
0301	REP	8	LAST	138	06,2245	7 1320 0	MASK	IMODES30		
0302	REP	9	LAST	138	06,2246	55*320 0	TS	IMODES30		
0303	REP	16	LAST	138	06,2247	7 4675 0	MASK	BIT14	SEE IF TURN-ON REQUEST.	
0304	REP	8	LAST	138	06,2250	10 000 0	CCS	A		
0305	REP	1			06,2251	1 2342 1	TCP	OPONLY	OPERATE ON ONLY.	
0306	REP	10	LAST	136	06,2252	4 1320 0	CS	IMODES30	IF TURN-ON REQUEST, WE SHOULD HAVE IMU	
0307	REP	13	LAST	133	06,2253	7 4702 1	MASK	BIT9	OPERATE.	
0308	REP	7	LAST	138	06,2254	10 000 0	CCS	A		
0309					06,2255	1 2260 0	TCP	+3		
0310	REP	1			06,2256	0 5537 0	TC	ALARM	ALARM IF NOT.	
0311					06,2257	00213 1	OCT	213		
0312	REP	1			06,2260	0 2717 1	+3	TC	CAGESUB	
0313	REP	1			06,2261	3 2764 0	CAP	90SECS		
0314	REP	1			06,2262	0 5140 1	TC	WAITLIST		
0315	REP	1			E3,1474		ERANK=	CDUIND		
0316	REP	1			06,2263	02270 0	ZCADR	ENDINON		
0316	REP	1			06,2264	14063 1				
0317	REP	3	LAST	138	06,2265	1 2367 0	TCP	C33TEST		
0318	REP	2	LAST	138	06,2266	3 2764 0	REINON	CAP	90SECS	
0319	REP	1			06,2267	0 5161 1	TC	VARDELAY		
0320	REP	8	LAST	63	06,2270	4 4711 0	ENDINON	CS	BIT2	RESET TURN-ON REQUEST FAIL BIT.
0321	REP	11	LAST	138	06,2271	7 1320 0	MASK	IMODES30		
0322	REP	12	LAST	138	06,2272	57*320 1	XCH	IMODES30		
0323	REP	9	LAST	138	06,2273	7 4711 0	MASK	BIT2	IF IT WAS OFF, SEND ISS DELAY COMPLETE.	
0324					06,2274	0 0006 1	EXTEND			
0325	REP	1			06,2275	1 2310 0	BZF	ENDINON2		

L T4RUPT PROGRAM

USER'S PAGE NO. 11 EQ S3

0326	REF	17	LAST	138	06,2276	3 4675 1	CAP	BIT14
0327	REF	13	LAST	138	06,2277	7 1320 0	MASK	IMODES30
0328					06,2300	0 0008 1	EXTEND	
0329	REF	1			06,2301	1 2266 0	BZF	RETINQ
0330	REF	14	LAST	64	06,2302	4 0074 0	CS	STATE
0331	REF	1			06,2303	7 4703 0	MASK	IMUSEFLO
0332	REF	8	LAST	138	06,2304	10 000 0	CCS	A
0333	REF	1			06,2305	1 5213 0	TCF	TASKOVER
0334	REF	1			06,2306	0 4574 0	TC	POSTJUMP
0335	REF	1			06,2307	17441 0	CADR	IMUBAD
0336	REF	10	LAST	61	06,2310	3 4674 0	ENDINQ2 CAP	BIT15
0337					06,2311	0 0006 1	EXTEND	
0338	REF	1			06,2312	05 012 1	WOR	CHAN12
0339	REF	2	LAST	133	06,2313	0 4633 0	TC	IBNKCALL
0340	REF	1			06,2314	17070 0	CADR	NOATTOPF
0341	REF	1			06,2315	0 5410 1	UNZ2 TC	ZEROICDU
0342	REF	1			06,2316	4 4722 0	CS	BITS4d5
0343					06,2317	0 0006 1	EXTEND	
0344	REF	2	LAST	139	06,2320	03 012 1	WAND	CHAN12
0345	REF	11	LAST	61	06,2321	3 4700 1	CAP	BIT11
0346	REF	2	LAST	136	06,2322	0 5161 1	TC	VARDELAY
0347	REF	1			06,2323	4 2754 1	ISSUP CS	OCT54
0348	REF	14	LAST	139	06,2324	7 1320 0	MASK	IMODES30
0349	REF	15	LAST	139	06,2325	55*320 0	TS	IMODES30
0350	REF	11	LAST	62	06,2326	4 4705 0	CS	BIT8
0351	REF	4	LAST	132	06,2327	7 1321 1	MASK	IMODES33
0352	REF	5	LAST	139	06,2330	55*321 1	TS	IMODES33
0353	REF	1			06,2331	0 2665 0	TC	SETISSW
0354	REF	11	LAST	139	06,2332	4 4674 1	CS	BIT15
0355					06,2333	0 0006 1	EXTEND	
0356	REF	3	LAST	139	06,2334	03 012 1	WAND	CHAN12
0357	REF	1			06,2335	3 4740 0	CAP	4SECS
0358	REF	2	LAST	138	06,2336	0 5140 1	TC	WAITLIST
0359	REF	2	LAST	138	E3,1474		ERANK-	CDUIND
0360	REF	1			06,2337	03056 1	ZCADR	PFAILQK
0360	REF	1			06,2340	16063 0		
0364	REF	2	LAST	139	06,2341	1 5213 0	TCF	TASKOVER
0367	REF	11	LAST	62	06,2342	3 4707 0	OPONLY CAP	BIT4

IF IT WAS ON AND TURN-ON REQUEST NOW
PRESENT, RE-ENTER 90 SEC DELAY IN WL.IF IT IS NOT ON NOW, SEE IF A PROG WAS
WAITING.

UNSUCCESSFUL TURN-ON.

SEND ISS DELAY COMPLETE.

TURN OFF ISS DELAY COUNTER
TURN OFF NO ATT LAMP.

REMOVE ZERO AND COARSE.

WAIT 10 SECS FOR CTRS TO FIND GIMBALS.

REMOVE CAGING, IMU FAIL INHIBIT, AND
ICDUPAIL INHIBIT FLAGS.

ENABLE DAP

ISS WARNING MIGHT HAVE BEEN INHIBITED.

REMOVE IMU DELAY COMPLETE DISCRETE.

DONT ENABLE PROG ALARM ON PIP FAIL FOR
ANOTHER 4 SECS.



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 28,1968 KOOLADE .069 PAGE 140

L T4RUPT PROGRAM

USER'S PAGE NO. 12 E0 S3

0368				06,2343	0 0008 1	EXTEND
0369	REP	4	LAST	139	06,2344 02 012 0	RAND CHAN12
0370	REP	9	LAST	139	06,2345 10 000 0	CCS A
0371	REP	4	LAST	138	06,2346 1 2367 0	TCP C33TEST
0372	REP	2	LAST	139	06,2347 3 4703 1	CAP IMUSEFLO
0373	REP	15	LAST	139	06,2350 7 0074 0	MASK STATE
0374	REP	10	LAST	140	06,2351 10 000 0	CCS A
0375	REP	5	LAST	140	06,2352 1 2367 0	TCP C33TEST
0376	REP	1			06,2353 0 2730 1	TC CAGESUB2
0377	REP	3	LAST	139	06,2354 0 4633 0	ISSZERO TC IBNKCALL
0378	REP	2	LAST	139	06,2355 17070 0	CADR NOATTOPF
0379	REP	10	LAST	82	06,2356 3 4706 1	CAP BITS
0380					06,2357 0 0008 1	EXTEND
0381	REP	5	LAST	140	06,2360 05 012 1	WOR CHAN12
03811	REP	2	LAST	139	06,2361 0 5410 1	TC ZEROICDU
0382	REP	12	LAST	139	06,2362 3 4705 1	CAP BITS
0383	REP	3	LAST	139	06,2363 0 5140 1	TC WAITLIST
0384	REP	1			1331	EBANK= OPTMODES
0385	REP	1			06,2364 02315 1	2CADR UNZ2
0385	REP	1			06,2365 14062 0	
0386	REP	6	LAST	140	06,2366 1 2367 0	TCP C33TEST

IF OPERATE ON ONLY AND WE ARE IN COARSE
ALIGN, DONT ZERO THE CDUS BECAUSE WE
MIGHT BE IN GIMBAL LOCK. USE V41N20 TO
RECOVER.

OTHERWISE, ZERO THE COUNTERS
UNLESS SOMEONE IS USING THE IMU.

SET TURNON FLAGS.

TURN OFF NO ATT LAMP
IMU CAGE OFF ENTRY

ISS CDU ZERO

WAIT 300 MS FOR AGS TO RECEIVE SIGNAL.



L INTERRUPT PROGRAM

USER'S PAGE NO. 13 E0 S3

R0387 PROGRAM NAME' C33TEST

R0388 FUNCTIONAL DESCRIPTION' THIS PROGRAM MONITORS THREE FLIP-FLOP INBITS OF CHANNEL 33 AND CALLS THE APPROPRIATE
 R0390 SUBROUTINE TO PROCESS A CHANGE. IT IS ANALOGOUS TO INMON, WHICH MONITORS CHANNEL 30, EXCEPT THAT IT READS
 R0392 CHANNEL 33 WITH A WAND INSTRUCTION BECAUSE A "WRITE" PULSE IS REQUIRED TO RESET THE FLIP-FLOPS. THE BITS
 R0394 PROCESSED AND THE SUBROUTINES CALLED ARE'

R0395	BIT	FUNCTION	SUBROUTINE
R0396	---	-----	-----
R0397	13	PIPA FAIL	PIPPAIL
R0398	12	DOWNLINK TOO FAST	DNTMFAST
R0399	11	UPLINK TOO FAST	UPTMFAST

R0400 UPON ENTRY TO THE SUBROUTINE, THE NEW BIT STATE IS IN A.

R0401 CALLING SEQUENCE' EVERY 480 MILLISECONDS AFTER TNCNTST.

R0402 JOBS OR TASKS INITIATED' NONE.

R0403 SUBROUTINES CALLED' PIPPAI, DNTMFAST AND UPTMFAST ON BIT CHANGES.

R0404 ERASABLE INITIALIZATION' C(IMODES33) = OCT 16000 ON A FRESH START OR RESTART, THEREFORE, THESE ALARMS WILL
 R0406 REAPPEAR IF THE CONDITIONS PERSIST.

R0407 ALARMS' NONE.

R0408 EXIT' GLOCKMON.

R0409 OUTPUT' UPDATED BITS 13, 12 AND 11 OF IMODES33 WITH CHANGES PROCESSED.

0410	REP	6	LAST	139	06,2367	3 1321 0	C33TEST	CA	IMODES33	SEE IF RELEVANT CHAN 33 BITS HAVE
0411	REP	1			06,2370	7 4763 0		MASK	33RDMSC	CHANGED.
0412	REP	2	LAST	39	06,2371	54 001 1		TS	L	
0413	REP	2	LAST	141	06,2372	3 4763 1		CAP	33RDMSC	
0414					06,2373	0 0006 1		EXTEND		
0415	REP	1			06,2374	03 033 1		WAND	CHAN33	RESETS FLIP-FLOP INPUTS.
0416					06,2375	0 0006 1		EXTEND		
0417	REP	3	LAST	135	06,2376	06 001 0		RXOR	LOHAN	
0418					06,2377	0 0006 1		EXTEND		
0419	REP	1			06,2400	1 2427 0		BZF	GLOCKMON	ON NO CHANGE.
0420	REP	8	LAST	136	06,2401	54 070 1		TS	RUPTRG1	SAVE BITS WHICH HAVE CHANGED.
0421	REP	7	LAST	141	06,2402	23=321 0		LXCH	IMODES33	
0422					06,2403	0 0006 1		EXTEND		
0423	REP	4	LAST	141	06,2404	06 001 0		RXOR	LOHAN	
0424	REP	8	LAST	141	06,2405	55=321 1		TS	IMODES33	UPDATED IMODES33.
0425	REP	3	LAST	131	06,2406	3 4714 1		CAP	ZERO	
0426	REP	9	LAST	141	06,2407	56 070 0		XCH	RUPTRG1	
0427					06,2410	6 0000 1		DOUBLE		



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1966 KOOLADE .069 PAGE 142

L T4RUPT PROGRAM

USER-S PAGE NO. 14 E0 S3

0426	REF	1		06,2411	1 2414 0		TCP	NXTIBT +1
0429	REF	4	LAST	136	06,2412	6 4712 1	-1	AD ONE
0430	REF	10	LAST	141	06,2413	24 070 0	NXTIBT	INCR RUPTREG1
0431					06,2414	6 0000 1	+1	DOUBLE
0432	REF	11	LAST	140	06,2415	54 000 0		TS A
0433	REF	2	LAST	142	06,2416	1 2413 1		TCP NXTIBT
0434	REF	3	LAST	136	06,2417	56 071 1		XCH RUPTREG2
0435	REF	11	LAST	142	06,2420	50 070 0		INDEX RUPTREG1
0436	REF	11	LAST	61	06,2421	3 4876 1		CAP BIT13
0437	REF	9	LAST	141	06,2422	7 1321 1		MASK IMODES33
0438	REF	12	LAST	142	06,2423	50 070 0		INDEX RUPTREG1
0439	REF	1			06,2424	0 2745 0		TC C33JMP
0440	REF	4	LAST	142	06,2425	10 071 0	NXTPL33	CCS RUPTREG2
0441	REF	3	LAST	142	06,2426	1 2412 0		TCP NXTIBT -1

SCAN FOR BIT CHANGES.

(CODING IDENTICAL TO CHAN 30).

GET NEW VALUE OF BIT WHICH CHANGED.

PROCESS POSSIBLE ADDITIONAL CHANGES.



L. INTERRUPT PROGRAM

USER'S PAGE NO. 15 E0 S3

P0442 PROGRAM NAME' GLOCKMON

R0443 FUNCTIONAL DESCRIPTION' THIS PROGRAM MONITORS THE CDUZ COUNTER TO DETERMINE WHETHER THE ISS IS IN GIMBAL LOCK
R0445 AND TAKES ACTION IF IT IS. THREE REGIONS OF MIDDLE GIMBAL ANGLE (MGA) ARE USED'

R0447 1) ABS(MGA) LESS THAN OR EQUAL TO 70 DEGREES - NORMAL MODE.
R0448 2) ABS(MGA) GREATER THAN 70 DEGREES AND LESS THAN OR EQUAL TO 85 DEGREES - GIMBAL LOCK LAMP TURNED ON.
R0450 3) ABS(MGA) GREATER THAN 85 DEGREES - ISS PUT IN COARSE ALIGN AND NO ATT LAMP TURNED ON.

R0452 CALLING SEQUENCE' EVERY 480 MILLISECONDS AFTER C33TEST.

R0453 JOBS OR TASKS INITIATED' NONE.

R0454 SUBROUTINES CALLED' 1) SETCOARS WHEN ABS(MGA) GREATER THAN 85 DEGREES AND ISS NOT IN COARSE ALIGN.
R0456 2) LAMPTST BEFORE TURNING OFF GIMBAL LOCK LAMP.

R0457 ERASABLE INITIALIZATION'

R0458 1) FRESH START OR RESTART WITH NO GROUPS ACTIVE' C(CDUZ) = 0, IMODES30 BIT 6 = 0, IMODES33 BIT 1 = 0.
R0460 2) RESTART WITH GROUPS ACTIVE' SAME AS FRESH START EXCEPT C(CDUZ) NOT CHANGED SO GIMBAL MONITOR
R0462 PROCEEDS AS BEFORE.

R0463 ALARMS' 1) MGA REGION (2) CAUSES GIMBAL LOCK LAMP TO BE LIT.
R0464 2) MGA REGION (3) CAUSES THE ISS TO BE PUT IN COARSE ALIGN AND THE NO ATT LAMP TO BE LIT IF EITHER NOT
R0466 SO ALREADY.

0467	REF	1		08,2427	10 034 1	GLOCKMON CCS	CDUZ	
0468	REF	1		08,2430	1 2434 1	TCF	GLOCKCHK	SEE IF MAGNITUDE OF MGA IS GREATER THAN
0469	REF	1		08,2431	1 2460 0	TCF	SETGLOCK	70 DEGREES.
0470	REF	2	LAST 143	08,2432	1 2434 1	TCF	GLOCKCHK	
0471	REF	2	LAST 143	08,2433	1 2460 0	TCF	SETGLOCK	
0472	REF	1		08,2434	6 2505 0	GLOCKCHK AD	-70DEGS	
0473				08,2435	0 0006 1	EXTEND		
0474	REF	3	LAST 143	08,2436	6 2457 0	BZMF	SETGLOCK -1	NO LOCK.
0475	REF	1		08,2437	6 2506 0	AD	-15DEGS	SEE IF ABS(MGA) GREATER THAN 85 DEGS.
0476				08,2440	0 0006 1	EXTEND		
0477	REF	1		08,2441	6 2455 1	BZMF	NOGIMRUN	
0478	REF	12	LAST 139	08,2442	3 4707 0	CAF	BIT4	IF SO, SYSTEM SHOULD BE IN COARSE ALIGN
0479				08,2443	0 0006 1	EXTEND		TO PREVENT GIMBAL RUN-AWAY.
0480	REF	6	LAST 140	08,2444	02 012 0	RAND	CHAN12	
0481	REF	12	LAST 142	08,2445	10 000 0	CCS	A	
0482	REF	2	LAST 143	08,2446	1 2455 0	TCF	NOGIMRUN	
0483	REF	4	LAST 140	08,2447	0 4633 0	TC	IBKCALL	GO INTO COARSE ALIGN.
0484	REF	1		08,2450	16746 0	CADR	SETCOARS	
0485	REF	1		08,2451	3 6211 0	CAF	SIX	ENABLE ISS ERROR COUNTERS IN 60 MS
0486	REF	4	LAST 140	08,2452	0 5140 1	TC	WAITLIST	



L T4RUPT PROGRAM

USER=3 PAGE NO. 16 E0 S3

0487	REP	3	LAST	139	E3,1474		EBANK=	CDUIND		
0488	REP	1			06,2453	02742 1	2CADR	CA+ECE		
0488	REP	1			06,2454	16063 0				
0489	REP	13	LAST	140	06,2455	3 4705 1	NOGIMRIN	CAP	BITs	TURN ON GIMBAL LOCK LAMP.
0490	REP	4	LAST	143	06,2456	1 2460 0		TCP	SETGLOCK	
0491	REP	4	LAST	141	06,2457	3 4714 1	-1	CAP	ZERO	
0492	REP	6	LAST	131	06,2460	6 1036 0	SETGLOCK	AD	DSPTAB +11D	SEE IF PRESENT STATE OF GIMBAL LOCK LAMP
0493	REP	14	LAST	144	06,2461	7 4705 0		MASK	BITs	AGREES WITH DESIRED STATE BY HALF ADDING
0494					06,2462	0 0006 1		EXTEND		THE TWO.
0495	REP	1			06,2463	1 5222 1		BZF	GLOCKOK	OK AS IS.
0496	REP	7	LAST	144	06,2464	7 1036 1		MASK	DSPTAB +11D	IF OFF, DONT TURN ON IF IMU BEING CAGED.
0497	REP	13	LAST	143	06,2465	10 000 0		CCS	A	
0498	REP	1			06,2466	1 2502 0		TCP	GLAMPTST	TURN OFF UNLESS LAMP TEST IN PROGRESS.
0499	REP	15	LAST	144	06,2467	3 4705 1		CAP	BITs	
0500	REP	16	LAST	139	06,2470	7 1320 0		MASK	IMODES30	
0501	REP	14	LAST	144	06,2471	10 000 0		CCS	A	
0502	REP	2	LAST	144	06,2472	1 5222 1		TCP	GLOCKOK	
0503	REP	8	LAST	144	06,2473	4 1036 1	GLINVERT	CS	DSPTAB +11D	INVERT GIMBAL LOCK LAMP.
0504	REP	16	LAST	144	06,2474	7 4705 0		MASK	BITs	
0505	REP	12	LAST	139	06,2475	6 4674 0		AD	BIT15	TO INDICATE CHANGE IN DSPTAB +11D.
0506	REP	9	LAST	144	06,2476	57=036 0		XCH	DSPTAB +11D	
0507	REP	1			06,2477	7 2164 1		MASK	OCT37737	
0508	REP	10	LAST	144	06,2500	27=036 1		ADS	DSPTAB +11D	
0509	REP	3	LAST	144	06,2501	1 5222 1		TCP	GLOCKOK	
0510	REP	1			06,2502	0 2750 1	GLAMPTST	TC	LAMPTST	TURN OFF UNLESS LAMP TEST IN PROGRESS.
0511	REP	4	LAST	144	06,2503	1 5222 1		TCP	GLOCKOK	
0512	REP	1			06,2504	1 2473 1		TCP	GLINVERT	
0513					06,2505	63434 1	-70DEGS	DEC	-.36686	-70 DEGREES SCALED IN HALF-REVOLUTIONS.
0514					06,2506	75252 0	-15DEGS	DEC	-.06333	



L INTERRUPT PROGRAM

USER=3 PAGE NO. 17 E0 S3

P0515 PROGRAM NAME: TLIM.

R0516 FUNCTIONAL DESCRIPTION: THIS PROGRAM MAINTAINS THE TEMP LAMP (BIT 4 OF CHANNEL 11) ON THE DSKY TO AGREE WITH
R0518 THE TEMP SIGNAL FROM THE ISS (BIT 15 OF CHANNEL 30). HOWEVER, THE LIGHT WILL NOT BE TURNED OFF IF A LAMP TEST
R0520 IS IN PROGRESS.

R0521 CALLING SEQUENCE: CALLED BY IMMON ON A CHANGE OF BIT 15 OF CHANNEL 30.

R0522 JOBS OR TASKS INITIATED: NONE.

R0523 SUBROUTINES CALLED: LAMPTST.

R0524 ERASABLE INITIALIZATION: FRESH START AND RESTART TURN THE TEMP LAMP OFF.

R0526 ALARMS: TEMP LAMP TURNED ON WHEN IMU TEMP GOES OUT OF LIMITS.

R0527 EXIT: NXTIFAIL.

R0528 OUTPUT: SERVICE OF TEMP LAMP.

IN A, EXCEPT FOR TLIM.

0530	REF	1		08,2507	7 4672 1	TLIM	MASK	POSNAX	REMOVE BIT FROM WORD OF CHANGES AND SET
0531	REF	5	LAST 142	08,2510	54 071 0		TS	RUPTREG2	DSKY TEMP LAMP ACCORDINGLY.
0532	REF	17	LAST 144	08,2511	11 320 0		CCS	IMODES30	
0533	REF	1		08,2512	1 2520 0		TCP	TEMPOK	
0534	REF	2	LAST 145	08,2513	1 2520 0		TCP	TEMPOK	
0535	REF	13	LAST 143	08,2514	3 4707 0		CAP	BIT4	TURN ON LAMP.
0536				08,2515	0 0006 1		EXTEND		
0537	REF	1		08,2516	05 011 1		WOR	DSALMOUT	
0538	REF	1		08,2517	1 2227 0		TCP	NXTIFAIL	
0539	REF	2	LAST 144	08,2520	0 2750 1	TEMPOK	TC	LAMPTST	IF TEMP NOW OK, DONT TURN OFF LAMP IF
0540	REF	2	LAST 145	08,2521	1 2227 0		TCP	NXTIFAIL	LAMP TEST IN PROGRESS.
0541	REF	14	LAST 145	08,2522	4 4707 1		CS	BIT4	
0542				08,2523	0 0006 1		EXTEND		
0543	REF	2	LAST 145	08,2524	03 011 1		WAND	DSALMOUT	TURN OFF TEMP CAUTION
0544	REF	3	LAST 145	08,2525	1 2227 0		TCP	NXTIFAIL	



L INTERRUPT PROGRAM

USER=5 PAGE NO. 18 E0 S3

P0545 PROGRAM NAME' ITURNON.

R0546 FUNCTIONAL DESCRIPTION' THIS PROGRAM IS CALLED BY IMMON WHEN A CHANGE OF BIT 14 OF CHANNEL 30 (ISS TURN-ON
R0548 REQUEST) IS DETECTED. UPON ENTRY, ITURNON CHECKS IF A TURN-ON DELAY SEQUENCE HAS FAILED, AND IF SO, IT EXITS.
R0550 IF NOT, IT CHECKS WHETHER THE TURN-ON REQUEST CHANGE IS TO ON OR OFF. IF ON, IT SETS BIT 7 OF IMODES30 TO 1 SO
R0552 THAT TNOTEST WILL INITIATE THE ISS INITIALIZATION SEQUENCE. IF OFF, THE TURN-ON DELAY SIGNAL, CHANNEL 12 BIT
R0554 15, IS CHECKED AND IF IT IS ON, ITURNON EXITS. IF THE DELAY SIGNAL IS OFF, PROGRAM ALARM 00207 IS ISSUED, BIT 2
R0558 OF IMODES30 IS SET TO 1 AND THE PROGRAM EXITS.

R0557 THE SETTING OF BIT 2 OF IMODES30 (ISS DELAY SEQUENCE FAIL) INHIBITS THIS ROUTINE AND IMUOP FROM
R0559 PROCESSING ANY CHANGES. THIS BIT WILL BE RESET BY THE ENDINON ROUTINE WHEN THE CURRENT 90 SECOND DELAY PERIOD
R0581 ENDS.

R0582 CALLING SEQUENCE' FROM IMMON WHEN ISS TURN-ON REQUEST CHANGES STATE.

R0583 JOBS OR TASKS INITIATED' NONE.

R0584 SUBROUTINES CALLED' ALARM, IF THE ISS TURN-ON REQUEST IS NOT PRESENT FOR 90 SECONDS.

R0586 ERASABLE INITIALIZATION' FRESH START AND RESTART SET BIT 15 OF CHANNEL 12 AND BITS 2 AND 7 OF IMODES30 TO 0,
R0588 AND BIT 14 OF IMODES30 TO 1.

R0569 ALARMS' PROGRAM ALARM 00207 IS ISSUED IF THE ISS TURN-ON REQUEST SIGNAL IS NOT PRESENT FOR 90 SECONDS.

R0571 EXIT' NXTIFAIL.

R0572 OUTPUT' BIT 7 OF IMODES30 TO START ISS INITIALIZATION, OR BIT 2 OF IMODES30 AND PROGRAM ALARM 00207 TO INDICATE
R0574 A FAILED TURN-ON SEQUENCE.

0575	REF	10	LAST	138	06,2526	3 4711 1	ITURNON	CAP	BIT2	IF DELAY REQUEST HAS GONE OFF
0576	REF	18	LAST	145	06,2527	7 1320 0		MASK	IMODES30	PREMATURELY, DO NOT PROCESS ANY CHANGES
0577	REF	15	LAST	144	08,2530	10 000 0		CCS	A	UNTIL THE CURRENT 90 SEC WAIT EXPIRES.
0578	REF	4	LAST	145	08,2531	1 2227 0		TCP	NXTIFAIL	
0579	REF	16	LAST	139	08,2532	3 4675 1		CAP	BIT14	SEE IF JUST ON OR OFF.
0580	REF	19	LAST	148	06,2533	7 1320 0		MASK	IMODES30	
0581					06,2534	0 0006 1		EXTEND		
0582	REF	1			08,2535	1 2551 0		BZF	ITURNON2	IF JUST ON.
0583	REF	13	LAST	144	06,2536	3 4674 0		CAP	BIT15	
0584					06,2537	0 0008 1		EXTEND		
0585	REF	7	LAST	143	08,2540	02 012 0		RAND	CHAN12	SEE IF DELAY PRESENT DISCRETE HAS BEEN
0586					08,2541	0 0006 1		EXTEND		SENT. IF SO, ACTION COMPLETE.
0587					08,2542	1 2544 1		BZF	+2	
0588	REF	5	LAST	146	08,2543	1 2227 0		TCP	NXTIFAIL	
0589	REF	11	LAST	148	08,2544	3 4711 1		CAP	BIT2	IF NOT, SET BIT TO INDICATE REQUEST NOT
0590	REF	20	LAST	146	06,2545	27 320 0		ADS	IMODES30	PRESENT FOR FULL DURATION.
0591	REF	2	LAST	138	08,2548	0 5537 0		TC	ALARM	
0592					08,2547	00207 1		OCT	207	
0593	REF	8	LAST	148	08,2550	1 2227 0		TCP	NXTIFAIL	



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1966 KOOLADE .069 PAGE 147

L T4RUPT PROGRAM

USER'S PAGE NO. 19 E0 S3

0594	REP	21	LAST	146	06,2551	4	1320	0	ITURNQV2	CS	IMODES30
0595	REP	14	LAST	136	06,2552	7	4704	1		MASK	BIT7
0596	REP	22	LAST	147	06,2553	27	320	0		ADS	IMODES30
0597	REP	7	LAST	146	06,2554	1	2227	0		TCP	NXTIPAIL

SET BIT7 TO INDICATE WAIT OF 1 SAMPLE



L T4RUPT PROGRAM

USER'S PAGE NO. 20 E0 S3

P0596 PROGRAM NAME' IMUCAGE.

R0599 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES OF THE IMUCAGE INBIT, CHANNEL 30 BIT 11. IF THE BIT
R0601 CHANGES TO 0 (CAGE BUTTON PRESSED), THE ISS IS CAGED (ICDU ZERO + COARSE ALIGN + NO ATT LAMP) UNTIL THE
R0603 ASTRONAUT SELECTS ANOTHER PROGRAM TO ALIGN THE ISS. ANY PULSE TRAINS TO THE ICDU'S AND GYRO'S ARE TERMINATED,
R0605 THE ASSOCIATED OUTCOUNTERS ARE ZEROED AND THE GYRO'S ARE DE-SELECTED. NO ACTION OCCURS WHEN THE BUTTON IS
R0607 RELEASED (INBIT CHANGES TO 1).

R0606 CALLING SEQUENCE' BY IMMON WHEN IMU CAGE BIT CHANGES.

R0609 JOBS OR TASKS INITIATED' NONE.

R0610 SUBROUTINES CALLED' CAGESUB.

R0611 ERASABLE INITIALIZATION' FRESH START AND RESTART SET BIT 11 OF IMODES30 TO 1.

R0613 ALARMS' NONE.

R0614 EXIT' NCTIPAIL.

R0615 OUTPUT' ISS CAGED, COUNTERS ZEROED, PULSE TRAINS TERMINATED AND NO ATT LAMP LIT.

0617	REP	16	LAST	146	06,2555	10 000 0	IMUCAGE	CCS	A		
0618	REP	1			06,2556	1 2354 0		TCP	ISSZERO		NO ACTION IF GOING OFF.
0619	REP	1			06,2557	4 2762 1		CS	OCT77000		
0620					06,2560	0 0006 1		EXTEND			TERMINATE ICDU, OPTICS, GYRO PULSE TRAINS
0621	REP	1			06,2561	03 014 1		WAND	CHAN14		
0622	REP	1			06,2562	4 2756 0		CS	OCT272		
0623					06,2563	0 0006 1		EXTEND			KNOCK DOWN TVC ENABLE, IMU ERROR COUNTER
0624	REP	8	LAST	146	06,2564	03 012 1		WAND	CHAN12		ENABLE, ZERO ICDU, COARSE ALIGN
0625	REP	12	LAST	142	06,2565	4 4676 0		CS	BIT13		ENABLE, OPTICS ERR CNTR ENABLE
0626					06,2566	0 0006 1		EXTEND			
0627	REP	3	LAST	145	06,2567	03 011 1		WAND	DSALMOUT		TURN OFF ENGINE
0628	REP	1			06,2570	0 2725 0		TC	CAGESUB1		
0629	REP	5	LAST	143	06,2571	0 4633 0		TC	IBNKCALL		
0630	REP	1			06,2572	16777 1		CADR	RNDREFDR		KNOCK DOWN TRACK, REFSMAT, DRIFT FLAGS
0631	REP	5	LAST	144	06,2573	4 4714 0		CS	ZERO		
0632	REP	1			06,2574	54 050 0		TS	CDUXCMD		ZERO COMMAND OUT-COUNTERS
0633	REP	1			06,2575	54 051 1		TS	CDUYCMD		
0634	REP	1			06,2576	54 052 1		TS	CDUZCMD		
0635	REP	1			06,2577	54 047 0		TS	GYROCMD		
0636	REP	1			06,2600	4 2761 1		CS	OCT740		HAVING WAITED AT LEAST 27 MCT FROM
0637					06,2601	0 0006 1		EXTEND			GYRO PULSE TRAIN TERMINATION, WE CAN
0638	REP	2	LAST	148	06,2602	03 014 1		WAND	CHAN14		DE-SELECT THE GYROS.



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 149

L T4RUPT PROGRAM

USER-S PAGE NO. 21 E0 S3

0639 REP 8 LAST 147 06,2603 1 2227 0

TCF NKTIFAIL



L INTERRUPT PROGRAM

USER'S PAGE NO. 22 E0 33

P0640 PROGRAM NAME' IMUOP.

R0641 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES IN THE ISS OPERATE DISCRETE, BIT 9 OF CHANNEL 30.
R0643 IF THE INBIT CHANGES TO 0, INDICATING ISS ON, IMUOP GENERALLY SETS BIT 7 OF IMODES30 TO 1 TO REQUEST ISS
R0645 INITIALIZATION VIA TQNTTEST. AN EXCEPTION IS DURING A FAILED ISS DELAY DURING WHICH BIT 2 OF IMODES30 IS SET
R0647 TO 1 AND NO FURTHER INITIALIZATION IS REQUIRED. WHEN THE INBIT CHANGES TO 1, INDICATING ISS OFF, IMUSEFLO IS
R0649 TESTED TO SEE IF ANY PROGRAM WAS USING THE ISS. IF SO, PROGRAM ALARM 00214 IS ISSUED.

R0651 CALLING SEQUENCE' BY IMMOM WHEN BIT 9 OF CHANNEL 30 CHANGES.

R0652 JOBS OR TASKS INITIATED' NONE.

R0653 SUBROUTINES CALLED' ALARM, IF ISS IS TURNED OFF WHILE IN USE.

R0654 ERASABLE INITIALIZATION' ON FRESH START AND RESTART, BIT 9 OF IMODES30 IS SET TO 1 EXCEPT WHEN THE GIMBAL LOCK
R0656 LAMP IS ON, IN WHICH CASE IT IS SET TO 0. THIS PREVENTS ICU ZERO BY TQNTTEST WITH THE ISS IN GIMBAL LOCK.

R0656 ALARMS' PROGRAM ALARM 00214 IF THE ISS IS TURNED OFF WHILE IN USE.

R0659 EXIT' NXTIFAIL.

R0660 OUTPUT' ISS INITIALIZATION REQUEST (IMODES30 BIT 7) OR PROGRAM ALARM 00214.

0662				06,2604	0 0006 1	IMUOP	EXTEND		
0663	REF	1		06,2605	1 2625 0		BZP	IMUOP2	IF OPERATE JUST ON, WAIT 1 SAMPLE.
0664	REF	10	LAST	142	06,2606	4 1321 1	CS	IMODES33	
0665	REF	17	LAST	144	06,2607	7 4705 0	MASK	BIT6	DISABLE DAP
0666	REF	11	LAST	150	06,2610	27*321 1	ADS	IMODES33	
0667	REF	6	LAST	146	06,2611	0 4633 0	TC	IRNKCALL	
0668	REF	2	LAST	146	06,2612	16777 1	CADR	RNDREFDR	KNOCK DOWN TRACK, REFSMAT, DRIFT FLAGS
0669	REF	2	LAST	138	06,2613	4 2757 1	CS	BITS7d6	
0670	REF	16	LAST	140	06,2614	7 0074 0	MASK	STATE	KNOCK DOWN RENDEVOUS, IMUSE FLAGS
0671	REF	17	LAST	150	06,2615	56 074 1	XCH	STATE	
0672					06,2616	4 0000 0	COM		IF GOING OFF, ALARM IF PROG USING IMU
0673	REF	3	LAST	140	06,2617	7 4703 0	MASK	IMUSEFLO	
0674	REF	17	LAST	148	06,2620	10 000 0	CCS	A	
0675	REF	9	LAST	149	06,2621	1 2227 0	TCF	NXTIFAIL	
0676	REF	3	LAST	146	06,2622	0 5537 0	TC	ALARM	
0677					06,2623	00214 0	OCT	214	
0678	REF	10	LAST	150	06,2624	1 2227 0	TCF	NXTIFAIL	
0679	REF	12	LAST	146	06,2625	3 4711 1	IMUOP2	CAP	BIT2
0680	REF	23	LAST	147	06,2626	7 1320 0	MASK	IMODES30	SEE IF FAILED ISS TURN-ON SEQ IN PROG.
0681	REF	16	LAST	150	06,2627	10 000 0	CCS	A	
0682	REF	11	LAST	150	06,2630	1 2227 0	TCF	NXTIFAIL	
0683	REF	2	LAST	146	06,2631	1 2551 0	TCF	ITURNON2	IF SO, DONT PROCESS UNTIL. PRESENT 90 SECONDS EXPIRES.



L T4RUPT PROGRAM

USER'S PAGE NO. 23 E0 S3

P0684 PROGRAM NAME' PIPFAIL

R0685 FUNCTIONAL DESCRIPTION' THIS PROGRAM PROCESSES CHANGES OF BIT 13 OF CHANNEL 33, PIPA FAIL. IT SETS BIT 10 OF
R0687 IMODES30 TO AGREE. IT CALLS SETISSW IN CASE A PIPA FAIL NECESSITATES AN ISS WARNING. IF NOT, I.E., IMODES30
R0669 BIT 1 = 1, AND A PIPA FAIL IS PRESENT AND THE ISS IS NOT BEING INITIALIZED, PROGRAM ALARM 00212 IS ISSUED.

R0691 CALLING SEQUENCE' BY C33TEST ON CHANGES OF CHANNEL 33 BIT 13.

R0692 JOBS OR TASKS INITIATED' NONE.

R0693 SUBROUTINES CALLED' 1) SETISSW, AND 2) ALARM (SEE FUNCTIONAL DESCRIPTION).

R0695 ERASABLE INITIALIZATION' SEE IMON FOR INITIALIZATION OF IMODES30. THE RELAVANT BITS ARE 5, 7, 8, 9, AND 10.

R0697 ALARMS' PROGRAM ALARM 00212 IF PIPA FAIL IS PRESENT BUT NEITHER ISS WARNING IS TO BE ISSUED NOR THE ISS IS
R0699 BEING INITIALIZED.

R0700 EXIT' NXIFL33.

R0701 OUTPUT' PROGRAM ALARM 00212 AND ISS WARNING MAINTENANCE.

0702	REF	19	LAST	150	06,2632	10 000 0	PIPFALL	CCS	A	SET BIT10 IN IMODES30 SO ALL ISS WARNING
0703	REF	12	LAST	62	06,2633	3 4701 0		CAF	BIT10	INFO IS IN ONE REGISTER.
0704	REF	24	LAST	150	06,2634	57*320 1		XCH	IMODES30	
0705	REF	1			06,2635	7 2763 0		MASK	-BIT10	
0706	REF	25	LAST	151	06,2636	27*320 0		ADS	IMODES30	
0707	REF	2	LAST	139	06,2637	0 2665 0		TC	SETISSW	
0708	REF	26	LAST	151	06,2640	4 1320 0		CS	IMODES30	IF PIP FAIL DOESNT LIGHT ISS WARNING, DO
0709	REF	11	LAST	63	06,2641	7 4712 0		MASK	BIT1	A PROGRAM ALARM IF IMU OPERATING BUT NOT
0710	REF	20	LAST	151	06,2642	10 000 0		CCS	A	CAGED OR BEING TURNED ON.
0711	REF	1			06,2643	1 2425 1		TCF	NXIFL33	
0712	REF	27	LAST	151	06,2644	3 1320 1		CA	IMODES30	
0713	REF	1			06,2645	7 2760 0		MASK	OCT1720	
0714	REF	21	LAST	151	06,2646	10 000 0		CCS	A	
0715	REF	2	LAST	151	06,2647	1 2425 1		TCF	NXIFL33	ABOVE CONDITION NOT MET.
0716	REF	4	LAST	150	06,2650	0 5537 0		TC	ALARM	
0717					06,2651	00212 0		OCT	212	
0718	REF	3	LAST	151	06,2652	1 2425 1		TCF	NXIFL33	

L INTERRUPT PROGRAM

USER'S PAGE NO. 24 E0 S3

R0719 PROGRAM NAMES' DNIMFAST, UPIMFAST

R0720 FUNCTIONAL DESCRIPTION' THESE PROGRAMS PROCESS CHANGES OF BITS 12 AND 11 OF CHANNEL 33. IF A BIT CHANGES TO A
R0722 0, A PROGRAM ALARM IS ISSUED. THE ALARMS ARE'

R0723	BIT	ALARM	CAUSE
R0724	---	----	----
R0725	12	01105	DOWNLINK TOO FAST
R0726	11	01106	UPLINK TOO FAST

R0727 CALLING SEQUENCE' BY C33TEST ON A BIT CHANGE.

R0728 SUBROUTINES CALLED' ALARM, IF A BIT CHANGES TO A 0.

R0729 ERASABLE INITIALIZATION' FRESH START OR RESTART, BITS 12 AND 11 OF IMODES33 ARE SET TO 1.

R0731 ALARMS' SEE FUNCTIONAL DESCRIPTION.

R0732 EXIT' NXIFL33.

R0733 OUTPUT' PROGRAM ALARM ON A BIT CHANGE TO 0.

0734	REP	22	LAST	151	06,2853	10 000 0	DNIMFAST CCS	A	
0735	REP	4	LAST	151	06,2854	1 2425 1	TCF	NXIFL33	
0736	REP	5	LAST	151	06,2855	0 5537 0	TC	ALARM	
0737					06,2856	01105 1	OCT	1105	
0738	REP	5	LAST	152	06,2857	1 2425 1	TCF	NXIFL33	
0739	REP	23	LAST	152	06,2860	10 000 0	UPIMFAST CCS	A	
0740	REP	6	LAST	152	06,2861	1 2425 1	TCF	NXIFL33	
0741	REP	6	LAST	152	06,2862	0 5537 0	TC	ALARM	
0742					06,2863	01106 1	OCT	1106	
0743	REP	7	LAST	152	06,2864	1 2425 1	TCF	NXIFL33	

DO PROG ALARM IF TM TOO FAST.

SAME AS DNLINK TOO FAST WITH DIFFERENT ALARM CODE.



L T4RUPT PROGRAM

USER=8 PAGE NO. 25 E0 83

P0744 PROGRAM NAME' SETISSW

R0745 FUNCTIONAL DESCRIPTION' THIS PROGRAM TURNS THE ISS WARNING LAMP ON AND OFF (CHANNEL 11 BIT 1 = 1 FOR ON,
R0747 0 FOR OFF) DEPENDING ON THE STATUS OF IMODES30 BITS 13 (IMJ FAIL) AND 4 (INHIBIT IMJ FAIL), 12 (ICDU FAIL) AND
R0749 3 (INHIBIT ICDU FAIL), AND 10 (PIPA FAIL) AND 1 (INHIBIT PIPA FAIL). THE LAMP IS LEFT ON IF A LAMP TEST IS IN
R0751 PROGRESS.

R0752 CALLING SEQUENCE' CALLED BY IMJON ON CHANGES TO IMJ FAIL AND ICDU FAIL. CALLED BY IFAILOK AND PFAILOK UPON
R0754 REMOVAL OF THE FAIL. INHIBITS. CALLED BY PIPFAIL WHEN THE PIPA FAIL DISCRETE CHANGES. IT IS CALLED BY PIPUSE
R0756 SINCE THE PIPA FAIL PROGRAM ALARM MAY NECESSITATE AN ISS WARNING, AND LIKEWISE BY PIPFREE WHEN THE ALARM DEPARTS
AND IT IS CALLED BY IMJZERO3 AND ISSUP AFTER THE FAIL INHIBITS HAVE BEEN REMOVED.

R0760 JOBS OR TASKS INITIATED' NONE.

R0761 SUBROUTINES CALLED' NONE.

R0762 ERASABLE INITIALIZATION'

R0763 1) IMODES30 - SEE IMJON.
R0764 2) IMODES33 BIT 1 = 0 (LAMP TEST NOT IN PROGRESS).

R0765 ALARMS' ISS WARNING.

R0766 EXIT' VIA Q.

R0767 OUTPUT' ISS WARNING LAMP SET PROPERLY.

0766	REF	1		06,2665	3 4720 0	SETISSW	CAP	OCT15	SET ISS WARNING USING THE FAIL BITS IN	
0769	REF	28	LAST	151	06,2666	7 1320 0	MASK	IMODES30	BITS 13, 12, AND 10 OF IMODES30 AND THE	
0770					06,2667	0 0006 1	EXTEND		FAILURE INHIBIT BITS IN POSITIONS	
0771	REF	13	LAST	151	06,2670	7 4701 1	MP	BIT10	4, 3, AND 1.	
0772	REF	29	LAST	153	06,2671	3 1320 1	CA	IMODES30		
0773					06,2672	0 0006 1	EXTEND			
0774	REF	5	LAST	141	06,2673	04 001 1	ROR	LCHAN	0 INDICATES FAILURE.	
0775					06,2674	4 0000 0	COM			
0776	REF	1			06,2675	7 4762 1	MASK	OCT15000		
0777	REF	24	LAST	152	06,2676	10 000 0	CCS	A		
0778	REF	1			06,2677	1 2710 1	TCF	ISSWON	FAILURE.	
0779	REF	12	LAST	151	06,2700	3 4712 1	ISSWOFF	CAP	BIT1	DONT TURN OFF ISS WARNING IF LAMP TEST
0780	REF	12	LAST	150	06,2701	7 1321 1	MASK	IMODES33		IN PROGRESS.
0781	REF	25	LAST	153	06,2702	10 000 0	CCS	A		
0782	REF	3	LAST	131	06,2703	0 0002 0	TC	Q		
0783	REF	13	LAST	153	06,2704	4 4712 0	CS	BIT1		
0784					06,2705	0 0006 1	EXTEND			
0785	REF	4	LAST	146	06,2706	03 011 1	WAND	DSALMOUT	TURN OFF ISS WARNING	
0786	REF	4	LAST	153	06,2707	0 0002 0	TC	Q		
0787					06,2710	0 0006 1	ISSWON	EXTEND		



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1966 KOOLADE .069 PAGE 154

L T4RUPT PROGRAM

USER-S PAGE NO. 26 E0 S3

07671	REP	1		06,2711	22 066 1	QXCH	ITEMP6	
07672	REP	1		06,2712	0 5651 0	TC	VARALARM	
07673	REP	14	LAST 153	06,2713	3 4712 1	CAP	BIT1	TELL EVERYONE WHAT CAUSED THE ISSWARNING
0768				06,2714	0 0006 1	EXTEND		
0789	REP	5	LAST 153	06,2715	05 011 1	WOR	DSALMOUT	TURN ON ISS WARNING
0790	REP	2	LAST 154	06,2716	0 0066 1	TC	ITEMP6	
0791	REP	1		06,2717	4 7703 0	CAGESUB	CS	SET OUTBITS + INTERNAL FLAGS FOR
0792				06,2720	0 0006 1	EXTEND	BIT15+6	SYSTEM TURN-ON OR CAGE, DISABLE THE
0793	REP	9	LAST 146	06,2721	03 012 1	WAND	CHAN12	ERROR COUNTER AND REMOVE IMU DELAY COMP.
0794	REP	2	LAST 139	06,2722	3 4722 1	CAP	BITS4d5	SEND ZERO AND COARSE.
0795				06,2723	0 0006 1	EXTEND		
0796	REP	10	LAST 154	06,2724	05 012 1	WOR	CHAN12	
0797	REP	11	LAST 144	06,2725	4 1036 1	CAGESUB1	CS	TURN ON NO ATT LAMP
0798	REP	1		06,2726	7 2753 0	MASK	DSPTAB +11D	
0799	REP	12	LAST 154	06,2727	27*036 1	ADS	CC40010	
0800	REP	30	LAST 153	06,2730	4 1320 0	CAGESUB2	CS	SET FLAGS TO INDICATE CAGING OR TURN-ON
0801	REP	1		06,2731	7 2755 0	MASK	IMODES30	AND INHIBIT ALL ISS WARNING INFO
0802	REP	31	LAST 154	06,2732	27*320 0	ADS	OCT75	
0803	REP	13	LAST 153	06,2733	4 1321 1	CS	IMODES30	
0804	REP	16	LAST 150	06,2734	7 4705 0	MASK	IMODES33	DISABLE DAP AUTO AND HOLD MODES
0805	REP	14	LAST 154	06,2735	27*321 1	ADS	BIT8	
0806	REP	5	LAST 153	06,2736	0 0002 0	TC	IMODES33	
0807	REP	3	LAST 151	06,2665		IMUFAIL.	Q	
0808	REP	4	LAST 154	06,2665		ICDUFAIL.	EQUALS SETISSW	
							EQUALS SETISSW	



L T4RUPT PROGRAM

USER=3 PAGE NO. 27 E0 S3

P0609 JUMP TABLES AND CONSTANTS.

0810	REF	1	06,2737	1 2528 0	IFAILJMP	TCF	ITURNON
0811	REF	1	06,2740	1 2665 1		TCF	IMUFAIL
0812	REF	1	06,2741	1 2665 1		TCF	ICDUFAIL
0813	REF	1	06,2742	1 2555 1		TCF	IMUCAGE
0814			06,2743	76400 1	30RDMSK	OCT	76400
0815	REF	1	06,2744	1 2604 0		TCF	IMUOP
0816	REF	1	06,2745	1 2632 0	C33JMP	TCF	PIPPAIL
0817	REF	1	06,2746	1 2653 1		TCF	DNTMFAST
0818	REF	1	06,2747	1 2660 1		TCF	UPTMFAST

CHANNEL 30 DISPATCH.

(BIT 10 NOT SAMPLED HERE).

CHANNEL 33 DISPATCH.

R0819 SUBROUTINE TO SKIP IF LAMP TEST NOT IN PROGRESS.

0820	REF	15	LAST 154	06,2750	4 1321 1	LAMPTEST	CS	IMODES33
0821	REF	15	LAST 154	06,2751	7 4712 0		MASK	BIT1
0822	REF	1		06,2752	1 3065 0		TCF	ZOPFIN3

BIT 1 OF IMODES33 = 1 IF LAMP TEST IN PROGRESS.

0823	REF	1		4763		33RDMSK	EQUALS	PRIO16
0824				06,2753	40010 1	CC40010	OCT	40010
0826				06,2754	00054 0	OCT54	OCT	54
0827				06,2755	00075 0	OCT75	OCT	75
0828				06,2756	00272 0	OCT272	OCT	00272
0829				06,2757	00300 1	BITS7d8	OCT	300
0830				06,2760	01720 0	OCT1720	OCT	1720
0831				06,2761	00740 1	OCT740	OCT	00740
0832	REF	1		4762		OCT15000	EQUALS	PRIO15
0833				06,2762	77000 1	OCT77000	OCT	77000
0834				06,2763	76777 1	-BIT10	OCT	-1000

0635				06,2764	21450 0	90SECS	DEC	9000
0836	REF	1		5656		120MS	=	OCT14
0637	REF	6	LAST 134	5222		GLOCKOK	EQUALS	RESUME

(DEC 12)



L T4RUPT PROGRAM

USBR-S PAGE NO. 28 E0 S3

P0838 OPTICS MONITORING AND ZERO ROUTINES

0839	REF	2	LAST	140	08,2785	3 1331 1	OPTMON	CA	OPTMODES	MONITOR OPTICS INBITS IN CHAN 30 AND 33
0840					08,2788	0 0008 1		EXTEND		
0841	REF	2	LAST	135	08,2787	08 030 1		RKOR	CHAN30	LOOK FOR OCCU FAIL BIT CHANGE
0842	REF	15	LAST	147	08,2770	7 4704 1		MASK	BIT7	
0843	REF	13	LAST	142	08,2771	54 070 1		TS	RUPTRG1	STORE CHANGE BIT
0844	REF	26	LAST	153	08,2772	10 000 0		CCS	A	
0845	REF	1			08,2773	0 3224 0		TC	OCCUPTST	PROCESS OCCUPAIL BIT CHANGE
0846	REF	1			08,2774	11*303 1	33OPTMON	CCS	OPTIND	BYPASS IF TVC TAKEOVER
0847					08,2775	1 3001 1		TCF	+4	
0848					08,2776	1 3001 1		TCF	+3	
0849					08,2777	1 3001 1		TCF	+2	
0850	REF	9	LAST	155	08,3000	1 5222 1		TCF	RESUME	
0851	REF	3	LAST	158	08,3001	3 1331 1		CA	OPTMODES	LOOK FOR OPTICS MODE SWITCH CHANGE
0852					08,3002	0 0008 1		EXTEND		
0853	REF	2	LAST	141	08,3003	08 033 1		RKOR	CHAN33	
0854	REF	1			08,3004	7 4722 0		MASK	OCTHIRTY	
0855	REF	14	LAST	156	08,3005	28 070 1		ADS	RUPTRG1	STORE INBIT CHANGES
0856	REF	4	LAST	158	08,3006	23*331 1		LXCH	OPTMODES	
0857					08,3007	0 0008 1		EXTEND		
0858	REF	6	LAST	153	08,3010	08 001 0		RKOR	LCHAN	
0859	REF	5	LAST	158	08,3011	55*331 0		TS	OPTMODES	UPDATE OPTMODES TO SHOW BIT CHANGES
0860					08,3012	4 0000 0		COM		SAMPLE CURRENT SWITCH SETTING
0861	REF	2	LAST	156	08,3013	7 4722 0		MASK	OCTHIRTY	
0862					08,3014	0 0008 1		EXTEND		
0863	REF	1			08,3015	1 3022 0		BZF	SETSAMP	MANUAL-SET ZERO IN SWSAMPLE
0864	REF	11	LAST	140	06,3018	7 4706 0		MASK	BITS	SEE IF CSC
0865	REF	27	LAST	156	06,3017	10 000 0		CCS	A	
0866					06,3020	0 3022 1		TC	+2	CSC-SET SWSAMPLE POS
0867	REF	1			08,3021	3 7716 0		CAP	NEGONE	ZOPTICS-SET SWSAMPLE (-1)
0868	REF	1			06,3022	55*314 1	SETSAMP	TS	SWSAMPLE	CURRENT OPTICS SWITCH SETTING
0869	REF	1			08,3023	11*315 0	PROCESSW	CCS	DESOPMOD	BRANCH ON PREVIOUS SETTING
0870	REF	1			08,3024	0 3125 1		TC	CSCDES	CSC
0871	REF	1			08,3025	0 3077 1		TC	MANUDES	MANUAL
0872	REF	1			06,3026	0 3027 1		TC	ZOPTDES	ZERO OPTICS



L T4RUPT PROGRAM

USER=3 PAGE NO. 29 E0 S3

0873	REF	2	LAST	156	06,3027	11=314 1	ZOPTDES	CCS	SYSAMPLE	IS SWITCH STILL AT ZOPTICS
0874	REF	1			06,3030	0 3047 1		TC	ZTOCSC	NOW AT CSC
0875	REF	1			06,3031	0 3037 0		TC	ZTOMAN	MANUAL
0876	REF	1			06,3032	0 3057 0		TC	ZOPFINI	ZOPTICS-SEE IF ZOPT PROCESSING
0877	REF	1			06,3033	0 3154 1		TC	SETDESMD	ZOPT NOT PROCESSING-NO ACTION
0878	REF	1			06,3034	11=317 1		CCS	ZOPTCNT	ZOPT PROCESSING-CHECK COUNTER
0879	REF	1			06,3035	0 3153 0		TC	SETCNT	32 SAMPLE NOT FINISHED-SET COUNTER
0880	REF	1			06,3036	0 3157 1		TC	SETZOEND	32 SAMPLE WAIT COMPLETED-SET UP ZOP END
0881	REF	2	LAST	157	06,3037	0 3057 0	ZTOMAN	TC	ZOPFINI	ZOP TO MANUAL-IS ZOPT DONE
0882	REF	2	LAST	157	06,3040	0 3154 1		TC	SETDESMD	YES-NORMAL EXIT
0883	REF	7	LAST	152	06,3041	0 5537 0	ZOPALARM	TC	ALARM	ALARM-SWITCHED ALTERED WHILE ZOPTICS
0884					06,3042	00118 1		OCT	00118	
0885	REF	1			06,3043	3 4717 1		CAF	OCT13	PROCESSING-SET RETURN OPTION
0886	REF	1			06,3044	55=316 0		TS	WTOPTION	
0887	REF	1			06,3045	0 3070 0		TC	CANZOPT	CANCEL ZOPT
0888	REF	3	LAST	157	06,3046	0 3154 1		TC	SETDESMD	
0889	REF	3	LAST	157	06,3047	0 3057 0	ZTOCSC	TC	ZOPFINI	SEE IF ZOPT PROCESSING
0890	REF	1			06,3050	0 3115 1		TC	MANTOCSC +3	NO-CHECK RETURN TO COARS OPT
0891	REF	8	LAST	157	06,3051	0 5537 0		TC	ALARM	ZOPT PROCESSING-ALARM
0892					06,3052	00118 1		OCT	00118	
0893	REF	2	LAST	157	06,3053	0 3070 0		TC	CANZOPT	CANCEL ZOPT
0894	REF	2	LAST	157	06,3054	0 3112 0		TC	MANTOCSC	ZERO CNT-LOOK FOR COARS OPT RETURN
0895	REF	14	LAST	138	06,3055	3 4702 0	COARSLQ	CAF	BIT9	IF COARS OPT SINCE FSTART GO TO L+2
0896	REF	1			06,3056	1 3064 1		TCF	ZOPFIN2	IF NOT GO TO L+1
0897	REF	16	LAST	155	06,3057	3 4712 1	ZOPFINI	CAF	BIT1	SEE IF END ZOPT TASK WORKING
0898	REF	6	LAST	156	06,3060	7 1331 0		MASK	OPTMODES	
0899	REF	28	LAST	156	06,3061	10 000 0		CCS	A	
0900	REF	10	LAST	156	06,3062	0 5222 0		TC	RESUME	ZOPT TASK WORKING-WAIT ONE SAMPLE PERIOD
0901	REF	11	LAST	62	06,3063	3 4710 0		CAF	BIT3	TEST IF ZOPTICS PROCESSING
0902	REF	7	LAST	157	06,3064	7 1331 0	ZOPFIN2	MASK	OPTMODES	RETURNS TO L+1 PROCESSING AND
0903	REF	29	LAST	157	06,3065	10 000 0	ZOPFIN3	CCS	A	
0904	REF	6	LAST	154	06,3066	24 002 0		INCR	Q	L+2 IF NOT
0905	REF	7	LAST	157	06,3067	0 0002 0		TC	Q	
0906	REF	2	LAST	143	06,3070	4 6211 1	CANZOPT	CS	SIX	CANCEL ZERO OPTICS
0907	REF	8	LAST	157	06,3071	7 1331 0		MASK	OPTMODES	ZERO ZOPT PROCESSING BIT-ENABLE OCTDFAIL
0908	REF	9	LAST	157	06,3072	55=331 0		TS	OPTMODES	
0909	REF	17	LAST	157	06,3073	4 4712 0		CS	BIT1	MAKE SURE ZERO OCTD IS OFF
0910					06,3074	0 0008 1		EXTEND		
0911	REF	11	LAST	154	06,3075	03 012 1		WAND	CHAN12	
0912	REF	8	LAST	157	06,3076	0 0002 0		TC	Q	

L TARIPT PROGRAM

USER=8 PAGE NO. 30 E0 S3

0913	REP	3	LAST	157	08,3077	11*314 1	MANUDES	CCS	SWSAMPLE
0914	REP	3	LAST	157	08,3100	0 3112 0		TC	MANTOCSC
0915	REP	1			08,3101	0 3107 1		TC	MANTOMAN
0916	REP	2	LAST	157	08,3102	11*316 0		CCS	WTOPTION
0917					08,3103	0 3105 0		TC	+2
0918	REP	1			08,3104	0 3151 1		TC	OPTZERO
0919	REP	1			08,3105	0 3216 1		TC	INITZOPT
0920	REP	4	LAST	157	08,3106	0 3154 1		TC	SETDESMD
0922	REP	3	LAST	156	08,3107	11*316 0	MANTOMAN	CCS	WTOPTION
0923	REP	4	LAST	156	08,3110	55*316 0		TS	WTOPTION
0924	REP	5	LAST	156	08,3111	0 3154 1		TC	SETDESMD
0925	REP	6	LAST	146	08,3112	3 4714 1	MANTOCSC	CAP	ZERO
0926	REP	5	LAST	156	08,3113	55*316 0		TS	WTOPTION
0927	REP	2	LAST	157	08,3114	55*317 1		TS	ZOPTCNT
0928	REP	1			08,3115	0 3055 1		TC	COARSLCK
0929	REP	6	LAST	156	08,3116	0 3154 1		TC	SETDESMD
0930	REP	5	LAST	142	08,3117	3 4712 1		CAP	ONE
0931	REP	2	LAST	156	08,3120	55*303 1		TS	OPTIND
0932	REP	13	LAST	150	08,3121	3 4711 1		CAP	BIT2
0933					08,3122	0 0006 1		EXTEND	
0934	REP	12	LAST	157	08,3123	05 012 1		WOR	CHAN12
0935	REP	7	LAST	156	08,3124	0 3154 1		TC	SETDESMD
0936	REP	4	LAST	156	08,3125	11*314 1	CSCDES	CCS	SWSAMPLE
0937	REP	8	LAST	156	08,3126	0 3154 1		TC	SETDESMD
0938	REP	1			08,3127	0 3133 0		TC	CSCOTMAN
0939	REP	1			08,3130	3 4705 1	CSCOTZOP	CAP	OCT40
0940	REP	3	LAST	156	08,3131	55*317 1		TS	ZOPTCNT
0941	REP	2	LAST	156	08,3132	0 3216 1		TC	INITZOPT
0942	REP	3	LAST	156	08,3133	11*303 1	CSCOTMAN	CCS	OPTIND
0943	REP	1			08,3134	0 3140 1		TC	CANCOARS
0944	REP	2	LAST	156	08,3135	0 3140 1		TC	CANCOARS
0945					08,3136	0 3137 1		TC	+1
0946	REP	9	LAST	156	08,3137	0 3154 1		TC	SETDESMD

SEE IF SWITCH STILL IN MANUAL MODE
NOW AT CSC
STILL MANUAL
ZOPTICS-LOOK AT ZOPTICS RETURN OPTION
5 SEC RETURN GOOD-CONTINUE ZOPTICS
ZOPTICS MUST START ANEW

SHOW ZERO OPTICS PROCESSING
NORMAL EXIT

DECREMENT RETURN OPTION TIME

CANCEL ZOFT RETURN OPTION IF SET

CHECK FOR COARS OPT RETURN
NO COARS TASK-NO ACTION

SET COARS OPT WORKING

ENABLE OPTICS CDU ERROR CNTS

SEE IF SWITCH STILL AT CSC
STILL AT CSC
MANUAL
ZOPTICS-INITIALIZE FOR ZOFT

SEE IF COARS WORKING
COARS WORKING-SWITCH NOT CSC-KILL COARS
NO COARS-NORMAL EXIT



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1966 KOOLADE .089 PAGE 159

L T4RUPT PROGRAM

USER=3 PAGE NO. 31 E0 S3

0947	REF	2	LAST	156	08,3140	3 7718 0	CANCOARS	CA	NEGONE	
0948	REF	4	LAST	156	08,3141	55*303 1		TS	OPTIND	
0949	REF	14	LAST	156	08,3142	4 4711 0		CS	BIT2	
0950					08,3143	0 0008 1		EXTEND		
0951	REF	13	LAST	156	08,3144	03 012 1		WAND	CHAN12	
0952	REF	10	LAST	157	08,3145	4 1331 0		CS	OPTMODES	
0953	REF	15	LAST	157	08,3146	7 4702 1		MASK	BIT9	
0954	REF	11	LAST	159	08,3147	27*331 0		ADS	OPTMODES	
0955	REF	10	LAST	156	08,3150	0 3154 1		TC	SETDESMD	
0956	REF	3	LAST	156	08,3151	0 3218 1	OPTZERO	TC	INITZOPT	
0957	REF	2	LAST	156	08,3152	3 4705 1		CA	OCT40	
0958	REF	4	LAST	156	08,3153	55*317 1	SETCNT	TS	ZOPTCNT	
0959	REF	5	LAST	156	08,3154	3 1314 0	SETDESMD	CA	SSAMPLE	
0960	REF	2	LAST	156	08,3155	55*315 0		TS	DESOPMOD	
0961	REF	11	LAST	157	08,3156	0 5222 0		TC	RESUME	
0962	REF	16	LAST	157	08,3157	3 4712 1	SETZOEND	CAP	BIT1	
0963					08,3160	0 0008 1		EXTEND		
0964	REF	14	LAST	159	08,3161	05 012 1		WOR	CHAN12	
0965	REF	1			08,3162	3 4112 1		CA	200MS	
0966	REF	5	LAST	143	08,3163	0 5140 1		TC	WAITLIST	
0967	REF	12	LAST	159	1331			ERANK=	OPTMODES	
0968	REF	1			08,3164	03172 0		ZCADR	ENDZOPT	
0968	REF	1			08,3165	14062 0				
0969	REF	13	LAST	159	08,3166	4 1331 0		CS	OPTMODES	
0970	REF	19	LAST	159	08,3167	7 4712 0		MASK	BIT1	
0971	REF	14	LAST	159	08,3170	27*331 0		ADS	OPTMODES	
0972	REF	11	LAST	159	08,3171	0 3154 1		TC	SETDESMD	
0973	REF	1			08,3172	0 3210 1	ENDZOPT	TC	ZEROPCDU	
0974	REF	20	LAST	159	08,3173	4 4712 0		CS	BIT1	
0975					08,3174	0 0008 1		EXTEND		
0976	REF	15	LAST	159	08,3175	03 012 1		WAND	CHAN12	
0977	REF	2	LAST	159	08,3176	3 4112 1		CAP	200MS	
0978	REF	3	LAST	139	08,3177	0 5161 1		TC	VARDELAY	
0979	REF	15	LAST	159	08,3200	4 1331 0		CS	OPTMODES	
0980	REF	14	LAST	153	08,3201	7 4701 1		MASK	BIT10	
0981	REF	16	LAST	159	08,3202	27*331 0		ADS	OPTMODES	
0982	REF	2	LAST	129	08,3203	4 4716 1		CS	SEVEN	
0983	REF	17	LAST	159	08,3204	7 1331 0		MASK	OPTMODES	
0984	REF	18	LAST	159	08,3205	55*331 0		TS	OPTMODES	
0985	REF	2	LAST	156	08,3206	0 3224 0		TC	OCUFTST	

SET OPTIND (-1) TO SHOW NOT WORKING
DISABLE OCU ERR CNTS

SET RETURN-TO-COARS BIT

INITIALIZE ZERO OPTICS

SET UP 32 SAMPLE WAIT

SET CURRENT SWITCH INDICATION-RESUME

SEND ZERO OPTICS CDU

HOLD ZERO CDU FOR 200 MS

SHOW ZOPTICS TASK WORKING

ZERO OCU COUNTERS
TURN OFF ZERO OCU

DELAY 200MS FOR CDUS TO RESYNCHRONIZE

SHOW ZOPTICS SINCE LAST FRESH START
OR RESTART

ENABLE OCUFAIL-SHOW OPTICS COMPLETE

CHECK OCU FAIL BIT AFTER ENABLE



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26, 1968 KOOLADE .069 PAGE 160

L T4RUPT PROGRAM

USBR-3 PAGE NO. 32 E0 S3

0986	REF	3	LAST	139	06,3207	0 5213 1	TC	TASKOVER
0987	REF	7	LAST	156	06,3210	3 4714 1	ZEROPCDU CAP	ZERO
0988	REF	2	LAST	37	06,3211	54 036 0	TS	CDUS
09881	REF	1			06,3212	55*307 0	TS	ZONE
0989	REF	1			06,3213	4 3261 0	CS	20DEGS
0990	REF	2	LAST	37	06,3214	54 035 0	TS	CDUT
0991	REF	9	LAST	157	06,3215	0 0002 0	TC	0
0992	REF	8	LAST	160	06,3216	3 4714 1	INITZOPT CAP	ZERO
0993	REF	6	LAST	156	06,3217	55*316 0	TS	WTOPTION
0994	REF	19	LAST	159	06,3220	4 1331 0	CS	OPTMODES
0995	REF	3	LAST	157	06,3221	7 6211 1	MASK	SIX
0996	REF	20	LAST	160	06,3222	27*331 0	ADS	OPTMODES
0997	REF	10	LAST	160	06,3223	0 0002 0	TC	0

ZERO IN CDUS, -20 IN CDUT
INITIALIZE SHAFT MONITOR ZONE

INITIALIZE ZOPTICS-INHIBIT OCDUFALL
AND SHOW OPTICS PROCESSING
SET ZERO OPTICS PROCESSING
OPTICS CDU FAIL INHIBITED



L T4RUPT PROGRAM

USER'S PAGE NO. 33 E0 S3

0998	REF	16	LAST	156	06,3224	3 4704 0	OCUPTST CAP	BIT7	SEE IF OCUFAIL ON OR OFF
0999					06,3225	0 0006 1	EXTEND		
1000	REF	3	LAST	156	06,3226	02 030 0	RAND	CHAN30	
1001	REF	30	LAST	157	06,3227	10 000 0	CCS	A	
1002	REF	1			06,3230	1 3252 0	TCP	OPFAILOF	OCUFAIL LIGHT OFF
1003	REF	15	LAST	159	06,3231	3 4711 1	CAP	BIT2	OCUFAIL LIGHT ON UNLESS INHIBITED
1004	REF	21	LAST	160	06,3232	7 1331 0	MASK	OPTMODES	
1005	REF	31	LAST	161	06,3233	10 000 0	CCS	A	
1006	REF	11	LAST	160	06,3234	0 0002 0	TC	Q	OCUFAIL INHIBITED
1007	REF	14	LAST	138	06,3235	3 4703 1	OPFAILOF CAP	BIT8	ON BIT
1008	REF	13	LAST	154	06,3236	6 1036 0	AD	DSPTAB +11D	
1009	REF	15	LAST	161	06,3237	7 4703 0	MASK	BIT8	
1010					06,3240	0 0006 1	SETOFF	EXTEND	
1011	REF	1			06,3241	1 6711 1	BZF	TCQ	NO CHANGE
1012	REF	3	LAST	141	06,3242	54 001 1	TS	L	
1013	REF	14	LAST	161	06,3243	3 1036 0	CA	DSPTAB +11D	
1014					06,3244	0 0006 1	EXTEND		
1015	REF	7	LAST	156	06,3245	06 001 0	ROR	LCHAN	
1016	REF	2	LAST	145	06,3246	7 4672 1	MASK	POS MAX	
1017	REF	14	LAST	146	06,3247	6 4674 0	AD	BIT15	SHOW ACTION WANTED
1018	REF	15	LAST	161	06,3250	55 0036 1	TS	DSPTAB +11D	
1019	REF	12	LAST	161	06,3251	0 0002 0	TC	Q	
1020	REF	21	LAST	159	06,3252	3 4712 1	OPFAILOF CAP	BIT1	DONT TURN OFF IF LAMP TEST
1021	REF	16	LAST	155	06,3253	7 1321 1	MASK	IMODES33	
1022	REF	32	LAST	161	06,3254	10 000 0	CCS	A	
1023	REF	13	LAST	161	06,3255	0 0002 0	TC	Q	LAMP TEST IN PROGRESS
1024	REF	16	LAST	161	06,3256	3 4703 1	CAP	BIT8	TURN OFF OCUFAIL LIGHT
1025	REF	16	LAST	161	06,3257	7 1036 1	MASK	DSPTAB +11D	
1026	REF	1			06,3260	1 3240 0	TCP	SETOFF	
1027	REF	1			4717		OCT13	= ELEVEN	
1028	REF	3	LAST	154	4722		OCTHIRTY	EQUALS BITS4d5	
1029					06,3261	16037 1	20DEGS	DEC 7199	
1030	REF	19	LAST	154	4705		OCT40	EQUALS BIT6	
1031	REF	1			4112		200MS	EQUALS OCT24	



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1966 KOOLADE .069 PAGE 162

L T4RUPT PROGRAM

USER=9 PAGE NO. 34 E0 S3

P1032 OPTICS CDU DRIVING PROGRAM

1033				10,2000					
1034	REF	1		10,2000			BANK	10	
1035				10,2000			SETLOC	OPTDRV	
1036	REF	1		10,2000			BANK		
							COUNT*	\$\$/SXT	

R1037 SHAFI STOP MONITOR-ZONE UPDATE

1036	REF	3	LAST	160	10,2000	3 0036 1	OPTDRIVE	CA	CDUS	GRAB OPTIC SHAFI CDU
1039	REF	4	LAST	161	10,2001	54 001 1	TS		L	
1040	REF	33	LAST	161	10,2002	10 000 0	CCS		A	GET ABS(CDUS)
1041	REF	1			10,2003	6 7707 0	AD		13,14,15	
1042					10,2004	1 2006 1	TCP		+2	ABS(CDUS) - 45 DEG
1043					10,2005	1 2003 1	TCP		-2	
1044					10,2006	0 0006 1	EXTEND			
1045	REF	1			10,2007	6 2016 1	BZMP	OZONE		LESS THAN 45 DEG-SET ZONE 0
1046	REF	2	LAST	160	10,2010	3 1307 1	CA	ZONE		IF ZONE ZERO, CHANGE TO + OR - OTHERWISE
1047					10,2011	0 0006 1	EXTEND			DONT MESS WITH ZONE
1048					10,2012	1 2014 1	BZP		+2	
1049	REF	1			10,2013	1 2020 0	TCP	CONTRIVE		JUST CONTINUE
1050	REF	5	LAST	162	10,2014	56 001 0	XCH		L	GREATER THAN 45 DEG-SET ZONE TO SIGN CDU
1051	REF	2	LAST	162	10,2015	1 2017 1	TCP	OZONE	+1	
1052	REF	9	LAST	160	10,2016	3 4714 1	CAP	ZERO		ABS(CDUS) LESS THEN 90 DEG-ZONE ZERO
1053	REF	3	LAST	162	10,2017	55=307 0	TS	ZONE		
1054	REF	1					COUNT*	\$\$/TARPT		
1055	REF	5	LAST	159	10,2020	11=303 1	CONTRIVE	CCS	OPTIND	
1056					10,2021	0 2025 1	TC		+4	WORK COARS OPTICS
1057					10,2022	0 2025 1	TC		+3	WORK COARS OPTICS
1058	REF	12	LAST	159	10,2023	0 5222 0	TC	RESUME		NO OPT
1059	REF	13	LAST	162	10,2024	0 5222 0	TC	RESUME		NO OPT
1060	REF	6	LAST	159	10,2025	3 1314 0	CA	SWSAMPLE		SEE IF SWITCH AT CMC
1061					10,2026	0 0006 1	EXTEND			
1062	REF	14	LAST	162	10,2027	6 5222 0	BZMP	RESUME		ZERO (-1) MANUAL (+0)
1063	REF	15	LAST	159	10,2030	3 4701 0	CAP	BIT10		
1064	REF	22	LAST	161	10,2031	7 1331 0	MASK	OPTMODES		SEE IF CDUS ZEROED SINCE LAST FSTART
1065	REF	34	LAST	162	10,2032	10 000 0	CCS		A	
1066					10,2033	0 2036 0	TC		+3	
1067	REF	9	LAST	157	10,2034	0 5537 0	TC	ALARM		OPTICS NOT ZEROED
1068					10,2035	00120 1	OCT		00120	
1069	REF	16	LAST	161	10,2036	3 4711 1	CA	BIT2		SEE IF ERR CNTS ENABLED
1070					10,2037	0 0006 1	EXTEND			
1071	REF	16	LAST	159	10,2040	02 012 0	RAND	CHAN12		
1072					10,2041	0 0006 1	EXTEND			
1073	REF	1			10,2042	1 2175 1	BZP	SETBIT		CNTS NOT ENABLED-DO IT AND RESUME
1074	REF	6	LAST	156	10,2043	3 4712 1	CAP	ONE		INITIALIZE OPTIND



L T4RUPT PROGRAM

USER=3 PAGE NO. 35

E0 S3

1075	REP	6	LAST	162	10,2044	55*303 1	OPT2	TS	OPTIND
1076					10,2045	0 0006 1		EXTEND	
1077	REP	1			10,2046	1 2132 1		BZF	TRUNCMD
1078	REP	7	LAST	163	10,2047	51*303 0	GETOPCMD	INDEX	OPTIND
1079	REP	2	LAST	96	10,2050	3 1160 1		CA	DESOPTT
1080					10,2051	0 0006 1		EXTEND	
1081	REP	8	LAST	163	10,2052	5 1303 0		INDEX	OPTIND
1082	REP	3	LAST	160	10,2053	20 035 0		MSU	CDUT
1083					10,2054	0 0006 1		EXTEND	
1084	REP	13	LAST	148	10,2055	7 4676 0		MP	BIT13
1085	REP	6	LAST	162	10,2056	56 001 0		XCH	L
1086					10,2057	6 0000 1		DOUBLE	
1087	REP	3	LAST	66	10,2060	54 061 1		TS	ITEMP1
1088					10,2061	1 2063 1		TCP	+2
1089	REP	7	LAST	163	10,2062	26 001 1		ADS	L
1090	REP	9	LAST	163	10,2063	51*303 0	STORCMD	INDEX	OPTIND
1091	REP	1			10,2064	23*305 0		LXCH	COMMANDO
1092	REP	10	LAST	163	10,2065	11*303 1		CCS	OPTIND
1093	REP	1			10,2068	1 2044 1		TCP	OPT2
1094	REP	4	LAST	163	10,2067	54 061 1		TS	ITEMP1
1095	REP	2	LAST	182 TO 162	16	18*		COUNT*	SS/SXT
1096	SHAFT STOP AVOIDANCE								
10961	REP	4	LAST	162	10,2070	10 036 0		CCS	CDUS
10962	REP	1			10,2071	8 4873 1		AD	NEG1/2
10963					10,2072	1 2074 1		TCP	+2
10964					10,2073	1 2071 1		TCP	-2
10965					10,2074	0 0006 1		EXTEND	
10966	REP	1			10,2075	6 2122 1		BZMP	CMOSETUP
1097	REP	4	LAST	162	10,2078	3 1307 1		CA	ZONE
1098					10,2077	0 0006 1		EXTEND	
1099	REP	2	LAST	163	10,2100	1 2122 0		BZF	CMOSETUP
1100	REP	15	LAST	161	10,2101	7 4674 1		MASK	BIT15
1101	REP	8	LAST	163	10,2102	54 001 1		TS	L
1102	REP	2	LAST	163	10,2103	3 1306 0		CA	COMMANDO +1
1103	REP	16	LAST	163	10,2104	7 4674 1		MASK	BIT15
1104					10,2105	0 0006 1		EXTEND	
1105	REP	8	LAST	161	10,2106	06 001 0		RXOR	LOHAN
1106	REP	35	LAST	162	10,2107	10 000 0		CCS	A
1107	REP	3	LAST	163	10,2110	1 2122 0		TCP	CMOSETUP
1108	REP	2	LAST	96	10,2111	11*161 1		CCS	DESOPTS
1109	REP	2	LAST	163	10,2112	6 4673 1		AD	NEG1/2
1110					10,2113	1 2115 1		TCP	+2
1111					10,2114	1 2112 0		TCP	-2
1112					10,2115	0 0006 1		EXTEND	

CHECK TRUNION COMMAND

PICK UP DESIRED OPT ANGLE

GET DIFFERENCE

NO OVFL

WITH OVFL

STORE COMMAND

GET NEXT COMMAND

INITIALIZE SEND INDICATOR TO ZERO

IF CDUS GREATER THAN +OR- 90 DEG CHECK FOR POSSIBLE STOP PROBLEM

CDUS LESS THAN 90 DEG, NO PROBLEMS

ZONE=3,NORMAL COMMAND
GRAB SIGN OF ZONE

GRAB SIGN OF SHAFT COMMAND

SIGN ZONE NOT EQUAL TO SIGN COMMAND
SEE IF DESOPTS BETWEEN -90 AND +90

ABS(DESOPTS) - 90 DEG



L T4RPT PROGRAM

USER'S PAGE NO. 36 E0 S3

1113				10,2116	6 2120 0	BZMF	+2	DESOPTS IN FIRST OR FOURTH QUAD	
1114	REP	4	LAST	183	10,2117 1 2122 0	TCF	CMDSETUP		
1115	REP	3	LAST	183	10,2120 4 1306 1	CS	COMMANDO +1	REVERSE REGULAR COMMAND	
1116	REP	4	LAST	184	10,2121 55*306 1	TS	COMMANDO +1		
1117	REP	2	LAST	162 TO 163'	40 40*		.COUNT* SS/T4RPT		
1118	REP	7	LAST	182	10,2122 3 4712 1	CMDSETUP	CAP ONE	SET OPTIND	
1119	REP	11	LAST	183	10,2123 55*303 1	TS	OPTIND		
1120	REP	36	LAST	183	10,2124 50 000 1	INDEX	A		
1121	REP	5	LAST	184	10,2125 11*305 1	CCS	COMMANDO	GET SIGN OF COMMAND	
1122	REP	1			10,2126 0 2144 1	TC	POSOPCMD		
1123	REP	1			10,2127 0 2151 0	TC	NEXTOPT +1	ZERO COMMAND-SKIP SEND INDICATOR	
1124	REP	1			10,2130 0 2161 0	TC	NEGOPCMD		
1125	REP	2	LAST	184	10,2131 0 2151 0	TC	NEXTOPT +1	ZERO COMMAND	
1126	REP	4	LAST	183	10,2132 4 0035 0	TRUNCMD	CS	CDUT	IF COMMAND GREATER THAN 45 DEG-COMMAND
1127	REP	3	LAST	183	10,2133 6 1180 1	AD	DESOPPT	45 DEG	
1128	REP	14	LAST	181	10,2134 54 002 1	TS	0		
1129	REP	1			10,2135 0 2047 0	TC	GETOPCMD	LESS THAN 45 DEG-NORMAL OPERATION	
1130	REP	37	LAST	184	10,2136 10 000 0	CCS	A		
1131	REP	3	LAST	181	10,2137 3 4672 0	CA	POSMAX	GREATER THAN 45 DEG-USE OPSMAX WITH	
1132					10,2140 0 2142 1	TC	+2	CORRECT SIGN	
1133	REP	4	LAST	184	10,2141 4 4672 1	CS	POSMAX		
1134	REP	9	LAST	183	10,2142 54 001 1	TS	L		
1135	REP	1			10,2143 0 2063 0	TC	STORCMD		
1136	REP	1			10,2144 6 2202 0	POSOPCMD	AD	MAXPLS1	
1137					10,2145 0 0006 1	EXTEND			
1138	REP	1			10,2146 6 2166 1	BZMF	DELOPCMD	COMMAND LESS THAN MAX PULSE	
1139	REP	1			10,2147 4 2201 1	CS	MAXPLS	GREATER THAN MAX PULSE-USE MAX PULSE	
1140	REP	5	LAST	183	10,2150 24 061 0	NEXTOPT	INCR	ITEMP1	SET SEND INDICATOR
1141	REP	2	LAST	131	10,2151 6 4713 0	AD	NEG0		MAKE SURE ZERO COMMAND IS -ZERO
1142	REP	12	LAST	164	10,2152 51*303 0	INDEX	OPTIND		
1143	REP	3	LAST	36	10,2153 54 053 0	TS	CDUTCMD		STORE PULSE IN SEND REG
1144	REP	13	LAST	184	10,2154 11*303 1	CCS	OPTIND		
1145	REP	5	LAST	184	10,2155 0 2123 0	TC	CMDSETUP +1	GET NEXT OPT	
1146	REP	6	LAST	184	10,2156 10 061 1	CCS	ITEMP1	ARE ANY PULSES TO GO	
1147	REP	1			10,2157 1 2171 0	TCF	SENDOPCMD	YES-SEND RM	
1148	REP	15	LAST	182	10,2160 0 5222 0	TC	RESUME	NO	
1149	REP	2	LAST	184	10,2161 6 2202 0	NEGOPCMD	AD	MAXPLS1	
1150					10,2162 0 0006 1	EXTEND			
1151	REP	2	LAST	184	10,2163 6 2166 1	BZMF	DELOPCMD	LESS THAN MAX PULSE	
1152	REP	2	LAST	184	10,2164 3 2201 0	CA	MAXPLS	MAX PULSES	
1153	REP	3	LAST	184	10,2165 1 2150 0	TCF	NEXTOPT		



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 185

L T4RUPT PROGRAM

USER'S PAGE NO. 37 E0 S3

1154	REF	14	LAST	164	10,2166	51*303 0	DELOPCMD	INDEX	OPTIND
1155	REF	6	LAST	164	10,2167	57*305 0	XCH	COMMANDO	
1156	REF	4	LAST	164	10,2170	1 2150 0	TOP	NEXTOPT	
1157	REF	1			10,2171	3 4755 1	SENDOCMD	CAP	11,12
1158					10,2172	0 0006 1		EXTEND	
1159	REF	3	LAST	148	10,2173	05 014 1	WOR	CHAN14	
1160	REF	16	LAST	164	10,2174	0 5222 0	TC	RESUME	
1161	REF	17	LAST	162	10,2175	3 4711 1	SETBIT	CAP	BIT2
1162					10,2176	0 0006 1		EXTEND	
1163	REF	17	LAST	162	10,2177	05 012 1	WOR	CHAN12	
1164	REF	17	LAST	165	10,2200	0 5222 0	TC	RESUME	
1165					10,2201	77532 0	MAXPLS	DEC	-165
1166					10,2202	77533 1	MAXPLS1	DEC	-164
1167	REF	1			4755		11,12	EQUALS	PRI08

SET UP SMALL COMMAND

SEND OCU DRIVE COMMANDS

ENABLE OCU ERR CNTS

START COARS NEXT TIME AROUND

WAS -80
WAS -79

L DOWNLINK LISTS

USER'S PAGE NO. 1 E0 S3

0001 22,2000
0002 REF 1 05,2000
0003 05,2000

BANK 22
SETLOC DOWNTELM
BANK

0004 REF 2 LAST 128 0340

EBANK= DNTMBUFF

R0005 SPECIAL DOWNLINK OP CODES

A0006
A0007
A0008
A0009
A0010
A0011
A0012
A0013
A0014
A0015
A0016
A0017
A0018
A0019

OP CODE ADDRESS(EXAMPLE)	SENDS..	BIT 15	BITS 14-12	BITS 11
1DNADR TIME2	(2 AGC WDS)	0	0	ECADR
2DNADR TEPHEM	(4 AGC WDS)	0	1	ECADR
3DNADR VGRDYY	(6 AGC WDS)	0	2	ECADR
4DNADR STATE	(8 AGC WDS)	0	3	ECADR
5DNADR UPBUPP	(10AGC WDS)	0	4	ECADR
6DNADR DSPTAB	(12AGC WDS)	0	5	ECADR
DNCHAN 30	CHANNELS	0	7	CHANNEL ADDRESS
DNPTR NEXTLIST	POINTS TO NEXT LIST.	0	6	ADRES

R0020 DOWNLIST FORMAT DEFINITIONS AND RULES-

1. END OF A LIST = -XDNADR (X = 1 TO 6), -DNPTR, OR -DNCHAN.
2. SNAPSHOT SUBLIST = LIST WHICH STARTS WITH A -1DNADR.
3. SNAPSHOT SUBLIST CAN ONLY CONTAIN 1DNADRS.
4. TIME2 1DNADR MUST BE LOCATED IN THE CONTROL LIST OF A DOWNLIST.
5. ERASABLE DOWN TELEMETRY WORDS SHOULD BE GROUPED IN SEQUENTIAL LOCATIONS AS MUCH AS POSSIBLE TO SAVE STORAGE USED BY DOWNLINK LISTS.
6. THE DOWNLINK LISTS(INCLUDING SUBLISTS) ARE ORGANIZED SUCH THAT THE ITEMS LISTED FIRST(IN FRONT OF FRANK) ARE SENT FIRST. EXCEPTION--- SNAPSHOT SUBLISTS. IN THE SNAPSHOT SUBLISTS THE DATA REPRESENTED BY THE FIRST 11 1DNADRS IS PRESERVED (IN ORDER) IN DNTMBUFF AND SENT BY THE NEXT 11 DOWNRUPTS. THE DATA REPRESENTED BY THE LIST IS SENT IMMEDIATELY.

0027 REF 1
0028 0007
0029 REF 1 0007
0030 05,2000 77340 0
0031 REF 1 05,2113
0032 REF 1 05,2214

COUNT 05/DLIST
ERASZERO EQUALS 7
SPARE EQUALS ERASZERO
LOWIDCODE OCT 77340
NOMDNLIST EQUALS CMSTADL
UPDNLIST EQUALS CMENTRDL

USE SPARE TO INDICATE AVAILABLE SPACE
LOW ID CODE
FRESH START AND POST P27 DOWNLIST
UPDATE PROGRAM (P27) DOWNLIST



L DOWNLINK LISTS

USER'S PAGE NO. 2 E0 S3

P0033 CSM POWERED FLIGHT DOWNLIST

R0034 -----CONTROL LIST-----

					05,2001	CMPOWERL EQUALS	
0035					05,2001	32047 0	DNPTR CMPOWER01 COLLECT SNAPSHOT
0036	REF	1			05,2001	24340 0	8DNADR DNTMBUFF SEND SNAPSHOT
0037	REF	3	LAST	166	05,2002	32056 0	DNPTR CMPOWER02 COLLECT SECOND SNAPSHOT
0038	REF	1			05,2003	14340 0	4DNADR DNTMBUFF SEND SNAPSHOT
0039	REF	4	LAST	167	05,2004	32063 0	DNPTR CMPOWER03 COMMON DATA
0040	REF	1			05,2005	03412 0	1DNADR TIG TIG,+1
0041	REF	3	LAST	126	05,2006	03422 0	1DNADR DELLT4 DELLT4,+1
0042	REF	2	LAST	115	05,2007	13414 1	3DNADR RTARG RTARG,+1,+2,...+5
0043	REF	2	LAST	115	05,2010	03427 0	1DNADR TGO TGO,+1
0044	REF	2	LAST	115	05,2011	01245 0	1DNADR PIPTIME1 PIPTIME1,+1
0045	REF	2	LAST	77	05,2012	11162 1	3DNADR DELV DELV,+1,...+4,+5
0046	REF	4	LAST	77	05,2013	03025 0	1DNADR PACTOFF PACTOFF,YACTOFF
0047	REF	1			05,2014	03231 1	1DNADR PCMD PCMD,YCMD
0048	REF	2	LAST	102	05,2015	03702 1	1DNADR CSTEER CSTEER,+1
0049	REF	2	LAST	122	05,2016	00007 0	1DNADR SPARE
0050	REF	1			05,2017	00007 0	1DNADR SPARE
0051	REF	2	LAST	167	05,2020	00007 0	1DNADR SPARE
0052	REF	3	LAST	167	05,2021	00007 0	8DNADR REFSMAT REFSMAT,+1,...+10,+11
0053	REF	1			05,2022	25735 1	DNPTR CMPOWER04 COMMON DATA
0054	REF	1			05,2023	00024 1	1DNADR TIME2 TIME2,TIME1
0055	REF	1			05,2024	32067 1	DNPTR CMPOWER05 COLLECT SNAPSHOT
0056	REF	1			05,2025	24340 0	8DNADR DNTMBUFF SEND SNAPSHOT
0057	REF	5	LAST	167	05,2026	32056 0	DNPTR CMPOWER02 COLLECT SNAPSHOT
0058	REF	2	LAST	167	05,2027	14340 0	4DNADR DNTMBUFF SEND SNAPSHOT
0059	REF	6	LAST	167	05,2030	32063 0	DNPTR CMPOWER03 COMMON DATA
0060	REF	2	LAST	167	05,2031	32076 1	DNPTR CMPOWER06 ELEV,+1
0061	REF	1			05,2032	03743 1	1DNADR CENTANG CENTANG,+1
0062	REF	2	LAST	124	05,2033	03753 0	1DNADR DELTAR DELTAR,+1
006205	REF	1			05,2034	02610 1	1DNADR STATE +100
00621	REF	2	LAST	91	05,2035	00106 0	1DNADR TEVENT TEVENT,+1
0063	REF	18	LAST	150	05,2036	01336 0	1DNADR PCMD PCMD,YCMD
0064	REF	2	LAST	79	05,2037	03231 1	1DNADR OPTMODES OPTMODES,HOLDFLAG
0065	REF	3	LAST	167	05,2040	01331 1	DNPTR CMPOWER07 COMMON DATA
0066	REF	23	LAST	162	05,2041	32101 0	3DNADR VGTIG VGTIG,+1,...+4,+5
0067	REF	1			05,2042	13720 0	1DNADR SPARE
0068	REF	3	LAST	122	05,2043	00007 0	1DNADR SPARE
0069	REF	4	LAST	167	05,2044	00007 0	1DNADR SPARE
0070	REF	5	LAST	167	05,2045	00007 0	1DNADR SPARE
0071	REF	6	LAST	167	05,2046	77770 1	-1DNADR SPARE

R0072 -----SUB LISTS-----

					05,2047	76605 0	CMPOWER01-1DNADR RN +2	RN+2,+3	SNAPSHOT DATA
0073	REF	1			05,2047	01174 1	1DNADR RN +4	RN+4,+5	
0074	REF	2	LAST	167	05,2050	01176 0	1DNADR VN	VN,+1	
0075	REF	1			05,2051	01200 1	1DNADR VN +2	VN+2,+3	
0076	REF	2	LAST	167	05,2052				

L DOWNLINK LISTS

USER=5 PAGE NO. 3 E0 S3

0077	REP	3	LAST	167	05,2053	01202 0	1DNADR VN +4	VN+4,+5	
0078	REP	2	LAST	77	05,2054	01204 0	1DNADR PIPTIME	PIPTIME,+1	
0079	REP	3	LAST	167	05,2055	76607 1	-1DNADR RN	RN,+1	
0080	REP	2	LAST	143	05,2056	77743 1	CMPOWE02-1DNADR CDUZ	CDUZ,CDUT	SNAPSHOT DATA
0081	REP	3	LAST	114	05,2057	03133 0	1DNADR ADOT	ADOT,+1/OGARATE,+1	
0082	REP	4	LAST	168	05,2060	03135 0	1DNADR ADOT +2	ADOT+2,+3/OMEGAB+2,+3	
0083	REP	5	LAST	168	05,2061	03137 1	1DNADR ADOT +4	ADOT+4,+5/OMEGAB+4,+5	
0084	REP	1			05,2062	77745 1	-1DNADR CDUX	CDUX,CDUY	
0085	REP	2	LAST	111	05,2063	07076 1	CMPOWE03 2DNADR AK	AK,AK1,AK2,RCSPLAGS	COMMON DATA
0086	REP	3	LAST	111	05,2064	70605 0	-2DNADR THETADX	THETADX,THETADY,THETADZ,GARBAGE	
0087	REP	19	LAST	167	05,2065	20074 0	CMPOWE04 5DNADR STATE	FLAGWRD0 THRU FLAGWRD9	COMMON DATA
0088	REP	17	LAST	161	05,2066	52754 0	-6DNADR DSPTAB	DISPLAY TABLES	
0089	REP	1			05,2067	76054 1	CMPOWE05-1DNADR R-OTHER +2	R-OTHER+2,+3	SNAPSHOT DATA
0090	REP	2	LAST	168	05,2070	01725 0	1DNADR R-OTHER +4	R-OTHER+4,+5	
0091	REP	1			05,2071	01727 1	1DNADR V-OTHER	V-OTHER,+1	
0092	REP	2	LAST	168	05,2072	01731 0	1DNADR V-OTHER +2	V-OTHER+2,+3	
0093	REP	3	LAST	168	05,2073	01733 1	1DNADR V-OTHER +4	V-OTHER+4,+5	
0094	REP	1			05,2074	01842 0	1DNADR T-OTHER	T-OTHER,+1	
0095	REP	3	LAST	168	05,2075	76056 0	-1DNADR R-OTHER	R-OTHER,+1	
0096	REP	1			05,2076	01432 0	CMPOWE06 1DNADR RSRBQ	RSRBQ,+1	COMMON DATA
0097	REP	1			05,2077	10372 0	3DNADR CADRFLSH	CADRFLSH,+1,+2,FAILREG,+1,+2	
0098	REP	5	LAST	163	05,2100	73741 1	-2DNADR CDUS	CDUS,PIPAZ,PIPAY,PIPAZ	
0099	REP	2	LAST	100	05,2101	03073 0	CMPOWE07 1DNADR LEMASS	LEMASS,CSMASS	COMMON DATA
0100	REP	1			05,2102	03086 1	1DNADR DAPDATR1	DAPDATR1,DAPDATR2	
0101	REP	3	LAST	111	05,2103	07167 0	2DNADR ERRORX	ERRORX,ERRORY,ERRORZ,GARBAGE	
0102	REP	4	LAST	114	05,2104	13125 0	3DNADR WBODY	WBODY,...+5/OMEGAC,...+5	
0103	REP	1			05,2105	05154 1	2DNADR REDOCTR	REDOCTR,THETAD,+1,+2	
0104	REP	32	LAST	154	05,2106	01320 1	1DNADR IMODES30	IMODES30,IMODES33	
0105					05,2107	34011 0	DNCHAN 11	CHANNELS 11,12	
0106					05,2110	34013 1	DNCHAN 13	CHANNELS 13,14	
0107					05,2111	34030 0	DNCHAN 30	CHANNELS 30,31	
0108					05,2112	43745 0	-DNCHAN 32	CHANNELS 32,33	

R0109



L DOWNLINK LISTS

USER'S PAGE NO. 4 E0 S3

P0110 CSM COAST AND ALIGNMENT DOWNLIST

R0111 -----CONTROL LIST-----

						CMCSTADL EQUALS	SEND ID BY SPECIAL CODING	
0112				05,2113			COLLECT SNAPSHOT	
0113	REP	1		05,2113	32047 0	DNPTR CMCSTA01	SEND SNAPSHOT	
0114	REP	7	LAST	167	05,2114	24340 0	6DNADR DNTMBUFF	COLLECT SECOND SNAPSHOT
0115	REP	1		05,2115	32056 0	DNPTR CMCSTA02	SEND SNAPSHOT	
0116	REP	8	LAST	169	05,2116	14340 0	4DNADR DNTMBUFF	COMMON DATA
0117	REP	1		05,2117	32063 0	DNPTR CMCSTA03	TIG,+1	
0118	REP	4	LAST	167	05,2120	03412 0	1DNADR TIG	BESTI,BESTJ
0119	REP	2	LAST	70	05,2121	00302 0	1DNADR BESTI	MARKDOWN,+1,...+5,+6,GARBAGE
0120	REP	4	LAST	123	05,2122	17674 1	4DNADR MARKDOWN	MARK2DWN,+1,...+5,+6
0121	REP	1		05,2123	17502 0	4DNADR MARK2DWN	HAPO,+1,HPER,+1	
0123	REP	2	LAST	90	05,2124	06363 1	2DNADR HAPO	RSP-RREC,+1
0124	REP	1		05,2125	02355 0	1DNADR RSP-RREC	VTIG,...+5	
0125	REP	4	LAST	167	05,2126	13720 0	3DNADR VTIG	REFSMAT,+1,...+10,+11
0126	REP	2	LAST	167	05,2127	25735 1	6DNADR REFSMAT	COMMON DATA
0127	REP	1		05,2130	32065 0	DNPTR CMCSTA04	TIME2,TIME1	
0128	REP	2	LAST	167	05,2131	00024 1	1DNADR TIME2	COLLECT SNAPSHOT
0129	REP	1		05,2132	32067 1	DNPTR CMCSTA05	SEND SNAPSHOT	
0130	REP	9	LAST	169	05,2133	24340 0	6DNADR DNTMBUFF	COLLECT SNAPSHOT
0131	REP	2	LAST	169	05,2134	32056 0	DNPTR CMCSTA02	SEND SNAPSHOT
0132	REP	10	LAST	169	05,2135	14340 0	4DNADR DNTMBUFF	COMMON DATA
0133	REP	2	LAST	169	05,2136	32063 0	DNPTR CMCSTA03	COMMON DATA
0134	REP	1		05,2137	32076 1	DNPTR CMCSTA06	OGC,+1,IGC,+1,MCC,+1	
0135	REP	2	LAST	93	05,2140	12757 1	3DNADR OGC	FALGWRDS 10 AND 11
0136	REP	20	LAST	166	05,2141	00106 0	1DNADR STATE +10D	TEVENT,+1
0137	REP	3	LAST	167	05,2142	01336 0	1DNADR TEVENT	LAUNCHAZ,+1
0138	REP	1		05,2143	02633 0	1DNADR LAUNCHAZ	OPTMODES,HOLDFLAG	
0139	REP	24	LAST	167	05,2144	01331 1	1DNADR OPTMODES	COMMON DATA
0140	REP	1		05,2145	32101 0	DNPTR CMCSTA07	DISPLAY TABLES	
0141	REP	16	LAST	166	05,2146	52754 0	-6DNADR DSPTAB	

R0142 -----SUB LISTS-----

						CMCSTA01 EQUALS CMCPOWE01	COMMON DOWNLIST DATA
0143	REP	2	LAST	167	05,2047		
0144	REP	3	LAST	167	05,2056	CMCSTA02 EQUALS CMCPOWE02	COMMON DOWNLIST DATA
0145	REP	3	LAST	167	05,2063	CMCSTA03 EQUALS CMCPOWE03	COMMON DOWNLIST DATA
0146	REP	2	LAST	167	05,2065	CMCSTA04 EQUALS CMCPOWE04	COMMON DOWNLIST DATA
0147	REP	2	LAST	167	05,2067	CMCSTA05 EQUALS CMCPOWE05	COMMON DOWNLIST DATA
0148	REP	2	LAST	167	05,2076	CMCSTA06 EQUALS CMCPOWE06	COMMON DOWNLIST DATA
0149	REP	2	LAST	167	05,2101	CMCSTA07 EQUALS CMCPOWE07	COMMON DOWNLIST DATA



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .089 PAGE 170

L DOWNLINK LISTS

USER=3 PAGE NO. 5 E0 S3

R0150



L DOWNLINK LISTS

USER'S PAGE NO. 6 E0 S3

P0151 CSM RENDEZVOUS AND PRETHRUST LIST

P0152 -----CONTROL LIST-----

0153				05,2147	CMREND01 EQUALS	SEND ID BY SPECIAL CODING
0154	REF	1		05,2147	DNPTR CMREND01	COLLECT SNAPSHOT
0155	REF	11	LAST	169	6DNADR DNTMBUFF	SEND SNAPSHOT
0156	REF	1		05,2151	DNPTR CMREND02	COLLECT SECOND SNAPSHOT
0157	REF	12	LAST	171	4DNADR DNTMBUFF	SEND SNAPSHOT
0158	REF	1		05,2153	DNPTR CMREND03	COMMON DATA
0159	REF	5	LAST	169	1DNADR TIG	TIG,+1
0160	REF	3	LAST	167	1DNADR DELLT4	DELLT4,+1
0161	REF	3	LAST	167	3DNADR RTARG	RTARG,+1...+4,+5
0162	REF	1		05,2157	1DNADR VHFTIME	VHFTIME,+1
0163	REF	5	LAST	169	4DNADR MARKDOWN	MARKTIME(DP),YCDU,SCDU,ZCDU,TCDU,XCDU,RV
0164	REF	1		05,2161	1DNADR VHFCONT	VHFCONT,+1
0165	REF	2	LAST	122	1DNADR TTPI	TTPI,+1
0166	REF	1		05,2163	1DNADR ECSTEER	ECSTEER,+1
0167	REF	2	LAST	91	1DNADR DELVTFF	DELVTFF,+1
0168	REF	7	LAST	167	1DNADR SPARE	
0169	REF	8	LAST	171	1DNADR SPARE	
0170	REF	3	LAST	121	1DNADR TPASS4	TPASS4,+1
0171	REF	3	LAST	115	3DNADR DELVSLV	DELVSLV,+1...+4,+5
0172	REF	5	LAST	89	2DNADR RANGE	RANGE,+1,RRATE,+1
0173	REF	1		05,2172	DNPTR CMREND04	COMMON DATA
0174	REF	3	LAST	169	1DNADR TIME2	TIME2,TIME1
0175	REF	1		05,2174	DNPTR CMREND05	COLLECT SNAPSHOT
0176	REF	13	LAST	171	6DNADR DNTMBUFF	SEND SNAPSHOT
0177	REF	2	LAST	171	DNPTR CMREND02	COLLECT SNAPSHOT
0178	REF	14	LAST	171	4DNADR DNTMBUFF	SEND SNAPSHOT
0179	REF	2	LAST	171	DNPTR CMREND03	COMMON DATA
0180	REF	1		05,2201	DNPTR CMREND06	COMMON DATA
0181	REF	3	LAST	167	1DNADR ELEV	ELEV,+1
018103	REF	2	LAST	167	1DNADR CENTANG	CENTANG,+1
018106	REF	3	LAST	167	1DNADR DELTAR	DELTAR,+1
0182	REF	3	LAST	125	3DNADR DELVEET3	DELVEET3,+1...+4,+5
0183	REF	25	LAST	169	1DNADR OPTMODES	OPTMODES,HOLDFLAG
0184	REF	1		05,2207	DNPTR CMREND07	COMMON DATA
0185	REF	2	LAST	88	1DNADR RTHETA	RTHETA,+1
0186	REF	2	LAST	115	2DNADR LAT(SPL)	LAT(SPL),LNG(SPL),+1
0187	REF	3	LAST	118	2DNADR VPRED	VPRED,+1,GAMMAI,+1
0188	REF	21	LAST	169	-1DNADR STATE +10D	FALSEWRDS 10 AND 11

P0189 -----SUB LISTS-----

0190	REF	3	LAST	169	05,2047	CMREND01 EQUALS CMPOWE01	COMMON DOWNLIST DATA
0191	REF	4	LAST	169	05,2056	CMREND02 EQUALS CMPOWE02	COMMON DOWNLIST DATA
0192	REF	4	LAST	169	05,2063	CMREND03 EQUALS CMPOWE03	COMMON DOWNLIST DATA



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1966 KOOLADE .069 PAGE 172

L DOWNLINK LISTS

0193	REF	3	LAST	189	05,2085	CMREND04 EQUALS CMPOWE04	COMMON DOWNLIST DATA
0194	REF	3	LAST	189	05,2087	CMREND05 EQUALS CMPOWE05	COMMON DOWNLIST DATA
0195	REF	3	LAST	189	05,2076	CMREND06 EQUALS CMPOWE06	COMMON DOWNLIST DATA
0196	REF	3	LAST	189	05,2101	CMREND07 EQUALS CMPOWE07	COMMON DOWNLIST DATA

R0197



L DOWNLINK LISTS

USER=8 PAGE NO. 6 E0 S3

P0198 CSM ENTRY AND UPDATE DOWNLIST

R0199 -----CONTROL LIST-----

				05,2214	CMENTROL EQUALS	SEND ID BY SPECIAL CODING
0200						COLLECT SNAPSHOT
0201	REF	1		05,2214	32047 0	SEND SNAPSHOT
0202	REF	15	LAST 171	05,2215	24340 0	COLLECT SECOND SNAPSHOT
0203	REF	1		05,2216	32058 0	SEND SNAPSHOT
0204	REF	16	LAST 173	05,2217	14340 0	COMMON DATA
0205	REF	1		05,2220	32083 0	QMDAPMOD,PREL,QREL,RREL
0206	REF	2	LAST 109	05,2221	07300 0	L/D1,+1
0208	REF	2	LAST 118	05,2222	03835 1	UPBUFF,+1...+10,+11
0209	REF	3	LAST 71	05,2223	24304 0	UPBUFF+12,13...+18,19D
0210	REF	4	LAST 173	05,2224	14320 0	COMPNUMB,UPOLDMOD,UPVERB,UPCOUNT
0211	REF	3	LAST 70	05,2225	04300 0	PAXERR1,ROLLTM
0212	REF	2	LAST 109	05,2226	03313 0	LATANG,+1,RODT,+1,THETAH,+1
0213	REF	3	LAST 117	05,2227	13875 1	LAT(SPL),+1,LNG(SPL),+1
0216	REF	3	LAST 171	05,2230	07400 1	ALFA/180,BETA/180
0217	REF	2	LAST 109	05,2231	03285 0	COMMON DATA
0218	REF	1		05,2232	32085 0	TIME2,TIME1
0219	REF	4	LAST 171	05,2233	00024 1	COLLECT SNAPSHOT
0220	REF	1		05,2234	32284 0	SEND SNAPSHOT
0221	REF	17	LAST 173	05,2235	24340 0	COLLECT SNAPSHOT
0222	REF	2	LAST 173	05,2236	32058 0	SEND SNAPSHOT
0223	REF	18	LAST 173	05,2237	14340 0	COLLECT SNAPSHOT
0224	REF	3	LAST 186	05,2240	07078 1	SEND SNAPSHOT
0225	REF	4	LAST 186	05,2241	13187 0	AK,AK1,AK2,RCSPLAGS
0226	REF	3	LAST 173	05,2242	07300 0	ERRORX/Y/Z,THETADX/Y/Z
0227	REF	5	LAST 173	05,2243	24304 0	QMDAPMOD,PREL,QREL,RREL
0228	REF	6	LAST 173	05,2244	14320 0	UPBUFF+0,+1...+10,+11D
0229	REF	3	LAST 186	05,2245	03073 0	UPBUFF+12,+13...+16,+19D
0230	REF	2	LAST 186	05,2246	03086 1	LEMMASS,CSMASS
0231	REF	2	LAST 109	05,2247	03314 1	DAPDATR1,DAPDATR2
0232	REF	26	LAST 171	05,2250	01331 1	ROLLTM,ROLLC
0233	REF	5	LAST 186	05,2251	13125 0	OPTMODES,HOLDFLAG
0234	REF	2	LAST 186	05,2252	05154 1	WBODY,...+5/OMEGAC,...+5
0235	REF	33	LAST 186	05,2253	01320 1	REDOCTR,THETAD+0,+1,+2
0236				05,2254	34011 0	IMODES30,IMODES33
0237				05,2255	34013 1	CHANNELS 11,12
0238				05,2256	34030 0	CHANNELS 13,14
0239				05,2257	34032 1	CHANNELS 30,31
0240	REF	2	LAST 186	05,2260	01432 0	CHANNELS 32,33
0241	REF	2	LAST 186	05,2261	10372 0	RSBRQ,+1
0242	REF	22	LAST 171	05,2262	00106 0	CADRFLSH,+1,+2,FAILREG,+1,+2
0243	REF	3	LAST 117	05,2263	74007 0	FAILGRDS 10 AND 11
						GAMMAEI,+1

R0244 -----SUB LISTS-----

				05,2047	CMENTR01 EQUALS CMPOWE01	COMMON DOWNLIST DATA
--	--	--	--	---------	--------------------------	----------------------

0245	REF	4	LAST 171	05,2047		
------	-----	---	----------	---------	--	--



L DOWNLINK LISTS

USER=S PAGE NO. 9 E0 S3

0246	REF	5	LAST	171	05,2056		CMENTR02 EQUALS CMPOWE02
0247	REF	5	LAST	171	05,2063		CMENTR03 EQUALS CMPOWE03
0248	REF	4	LAST	172	05,2065		CMENTR04 EQUALS CMPOWE04
0249	REF	5	LAST	167	05,2264	78615 1	CMENTR05-1DNADR DELV
0250	REF	6	LAST	174	05,2265	01164 0	1DNADR DELV +2
0251	REF	7	LAST	174	05,2266	01166 1	1DNADR DELV +4
0252	REF	3	LAST	117	05,2267	03726 1	1DNADR TIE
0253	REF	3	LAST	117	05,2270	03724 0	1DNADR VIO
0254	REF	4	LAST	171	05,2271	03766 0	1DNADR VPRED
0255	REF	3	LAST	167	05,2272	78532 1	-1DNADR PIPTIME1
0256	REF	4	LAST	172	05,2101		CMENTR07 EQUALS CMPOWE07

COMMON DOWNLIST DATA

COMMON DOWNLIST DATA

COMMON DOWNLIST DATA

DELV,+1 SNAPSHOT DATA

DELV+2,+3

DELV+4,+5

TIE,+1

VIO,+1

VPRED,+1

PIPTIME1,+1

COMMON DOWNLIST DATA

R0257

L DOWNLINK LISTS

USER=S PAGE NO. 10 E0 S3

P0258 P22 DOWNLISTS

R0259 -----CONTROL LIST-----

0260				05,2273		CMPG22DL EQUALS	SEND ID BY SPECIAL CODING
0261	REF	1		05,2273	32047 0	DNPTR CMPG2201	COLLECT SNAPSHOT
0262	REF	19	LAST	173	05,2274	6DNADR DNTMUFF	SEND SNAPSHOT
0263	REF	1		05,2275	32056 0	DNPTR CMPG2202	COLLECT SNAPSHOT
0264	REF	20	LAST	175	05,2276	4DNADR DNTMUFF	SEND SNAPSHOT
0265	REF	1		05,2277	32063 0	DNPTR CMPG2203	COMMON DATA
0266	REF	2	LAST	119	05,2300	6DNADR SVMRCDAT	LANDING SITE MARK DATA
0267	REF	3	LAST	175	05,2301	6DNADR SVMRCDAT +12D	SVMRCDAT+0...+34
0268	REF	4	LAST	175	05,2302	6DNADR SVMRCDAT +24D	LANDING SITE MARK DATA
0269	REF	2	LAST	95	05,2303	1DNADR LANDMARK	LANDMARK, GARBAGE
0270	REF	9	LAST	171	05,2304	1DNADR SPARE	
0271	REF	10	LAST	175	05,2305	1DNADR SPARE	
0272	REF	11	LAST	175	05,2306	1DNADR SPARE	
0273	REF	1		05,2307	32065 0	DNPTR CMPG2204	COMMON DATA
0274	REF	5	LAST	173	05,2310	1DNADR TIME2	TIME2, TIME1
0275	REF	1		05,2311	32337 1	DNPTR CMPG2205	COLLECT SNAPSHOT
0276	REF	21	LAST	175	05,2312	2DNADR DNTMUFF	SEND SNAPSHOT
0277	REF	12	LAST	175	05,2313	1DNADR SPARE	
0278	REF	13	LAST	175	05,2314	1DNADR SPARE	
0279	REF	14	LAST	175	05,2315	1DNADR SPARE	
0280	REF	15	LAST	175	05,2316	1DNADR SPARE	
0281	REF	2	LAST	175	05,2317	DNPTR CMPG2202	COLLECT SNAPSHOT
0282	REF	22	LAST	175	05,2320	4DNADR DNTMUFF	SEND SNAPSHOT
0283	REF	2	LAST	175	05,2321	DNPTR CMPG2203	COMMON DATA
0284	REF	1		05,2322	32076 1	DNPTR CMPG2206	COMMON DATA
0285	REF	2	LAST	95	05,2323	1DNADR 8NN	8NN, GARBAGE
0286	REF	23	LAST	173	05,2324	1DNADR STATE +10D	PARADIGMS 10 AND 11
0287	REF	1		05,2325	12025 0	3DNADR RLS	RLS, +1, ..., +4, +5
0288	REF	16	LAST	175	05,2326	1DNADR SPARE	
0289	REF	27	LAST	173	05,2327	1DNADR OPTIMODES	OPTIMODES, HOLDFLAG
0290	REF	1		05,2330	32101 0	DNPTR CMPG2207	COMMON DATA
0291	REF	17	LAST	175	05,2331	1DNADR SPARE	
0292	REF	18	LAST	175	05,2332	1DNADR SPARE	
0293	REF	19	LAST	175	05,2333	1DNADR SPARE	
0294	REF	20	LAST	175	05,2334	1DNADR SPARE	
0295	REF	21	LAST	175	05,2335	1DNADR SPARE	
0296	REF	22	LAST	175	05,2336	-1DNADR SPARE	

R0297 -----SUB LISTS-----

0296	REF	5	LAST	173	05,2047	CMPG2201 EQUALS CMP0WE01	COMMON DOWNLIST DATA
0299	REF	6	LAST	174	05,2056	CMPG2202 EQUALS CMP0WE02	COMMON DOWNLIST DATA
0300	REF	6	LAST	174	05,2063	CMPG2203 EQUALS CMP0WE03	COMMON DOWNLIST DATA



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1966 KOOLADE .069 PAGE 176

L DOWNLINK LISTS

USER-S PAGE NO. 11 E0 83

0301	REP	5	LAST	174	05,2085	CMPO2204 EQUALS CMPO204	COMMON DOWNLIST DATA
0302	REP	2	LAST	76	05,2337	76672 0	LONG,+1
0303	REP	2	LAST	76	05,2340	01107 0	ALT,+1
0304	REP	3	LAST	76	05,2341	76674 0	LAT,+1
						-1DNADR LAT	
0305	REP	4	LAST	172	05,2076	CMPO2206 EQUALS CMPO206	COMMON DOWNLIST DATA
0306	REP	5	LAST	174	05,2101	CMPO2207 EQUALS CMPO207	COMMON DOWNLIST DATA
R0307							
0308	REP	2	LAST	166	05,2342	02113 0	DNTABLE GENADR CMCTADL
0309	REP	2	LAST	166	05,2343	02214 1	GENADR CMENTROL
0310	REP	1			05,2344	02147 1	GENADR CMENDDL
0311	REP	1			05,2345	02001 1	GENADR CMPTEDL
0312	REP	1			05,2346	02273 0	GENADR CMPO22DL

R0313



L FRESH START AND RESTART

USER'S PAGE NO. 1 EQ 33

R00001 PROGRAM DESCRIPTION

8 APRIL, 1967

R0001

SUNDISK REV 120

R0002 FUNCTIONAL DESCRIPTION

R0003 SLAP1 MAN INITIATED FRESH START

- R0004 1. EXECUTE STARTSUB
- R0005 2. TURN OFF DSKY DISCRETE-LAMPS
- R0006 3. CLEAR FAIL REGISTERS, SELF CHECK ERROR COUNTER AND RESTART COUNTER
- R0007 4. EXECUTE DOPSTART

R0009 DOPSTART MACHINE INITIATED FRESH START

- R0010 1. CLEAR SELF-CHECK REGISTERS, MODE REGISTER AND CDUZ REGISTER
- R0011 2. CLEAR PHASE TABLE
- R0012 3. INITIALIZE IMU FLAGS
- R0013 4. INITIALIZE FLAGWORDS
- R0014 5. TRANSFER CONTROL TO IDLE LOOP IN DUMMYJOB

R0015 GOPROG HARDWARE RESTART

- R0016 0. EXECUTE STARTSUB
- R0017 1. TRANSFER CONTROL TO DOPSTART IF ANY OF THE FOLLOWING CONDITIONS EXIST.
 - R0019 A. RESTART OCCURED DURING EXECUTION OF ERASCHK
 - R0020 B. BOTH OSCILLATOR FAIL AND AGC WARNING ARE ON
 - R0021 C. MARK REJECT AND EITHER NAV OR MAIN DSKY ERROR LIGHT RESET ARE ON.
- R0022 2. SCHEDULE A TSURPT PROGRAM FOR THE DAP
- R0023 3. SET FLAGWRD5 BITS FOR INTWAKE ROUTINE
- R0024 4. EXTINGUISH ALL DSKY LAMPS, EXCEPT PROGRAM ALARM, GIMBAL LOCK AND NO ATT
- R0025 5. INITIALIZE IMU FLAGS
- R0026 6. IF ENGINE COMMAND IS ON (FLAGWRD5, BIT 7), SET ENGINE ON (CHAN-
NEL 11, BIT 13)
- R0027 7. TRANSFER CONTROL TO GOPROG3

R0031 ENFMA SOFTWARE RESTART INITIATED BY MAJOR MODE CHANGE

- R0032 1. EXECUTE STARTSB2
- R0033 2. KILL PROGRAMS THAT WERE INTEGRATING OR WAITING FOR INTEGRATION ROUTINE
- R0034 3. TRANSFER CONTROL TO GOPROG3

R0036 GOPROG3 SUBROUTINE COMMON TO GOPROG AND ENFMA

- R0037 1. TEST PHASE TABLES - IF INCORRECT, DISPLAY ALARM 1107 AND TRANSFER CONTROL TO DOPSTART
- R0038 2. DISPLAY MAJOR MODE
- R0039 3. IF ANY GROUPS WERE ACTIVE UPON RESTART, TRANSFER CONTROL TO THE
- R0040

L FRESH START AND RESTART

USER'S PAGE NO. 2 E0 S3

R0041 RESTARTS SUBROUTINE TO RESCHEDULE PENDING TASKS, LONGCALLS, AND
R0042 JOBS (P20 IS RESTARTED VIA FINDVAC)
R0043 4. IF NO GROUPS WERE ACTIVE UPON RESTART, DISPLAY ALARM CODE
R0044 1110 (RESTART WITH NO ACTIVE GROUPS).
R0045 5. TRANSFER CONTROL TO IDLE LOOP IN DUMMYJOB

R0046 STARTSUB SUBROUTINE COMMON TO SLAP1 AND GOPROG

R0047 1. CLEAR OUTBIT CHANNELS 5 AND 6
R0048 2. INITIALIZE TIMES,TIME4,TIME3
R0049 3. TRANSFER CONTROL TO STARTSB2

R0050 STARTSB2 SUBROUTINE COMMON TO STARTSUB AND ENEMA

R0051 1. INITIALIZE OUTBIT CHANNELS 11,12,13 AND 14
R0052 2. REPLACE ALL TASKS ON WAITLIST WITH ENDTASK
R0053 3. MAKE ALL EXECUTIVE REGISTERS AVAILABLE
R0054 4. MAKE ALL VAC AREAS AVAILABLE
R0055 5. CLEAR DSKY REGISTERS
R0056 6. ZERO NUMEROUS SWITCHES
R0057 7. INITIALIZE OPTICS FLAGS
R0058 8. INITIALIZE PIPA AND TELEMETRY FAIL FLAGS
R0059 9. INITIALIZE DOWN TELEMETRY
R0060 INPUT/OUTPUT INITIALIZATION

R0061 A. CALLING SEQUENCE

R0062 SLAP1 - TC POSTJUMP OR VERB 36,ENTER
R0063 CADR SLAP1

R0064 ENEMA - TC POSTJUMP *** DO NOT CALL ENEMA WITHOUT ***
R0065 CADR ENEMA *** CONSULTING POCH PEOPLE ***

R0066 B. OUTPUT

R0067 ERASABLE MEMORY INITIALIZATION

R0068 PROGRAM ANALYSIS

R0069 A. SUBROUTINES CALLED

R0070 MR.KLEAN, WAITLIST, DSPMM, ALARM, RESTARTS, FINDVAC

R0071 B. ALARMS

R0072 1107 PHASE TABLE ERROR
R0073 1110 RESTART WITH NO ACTIVE GROUPS



L FRESH START AND RESTART

USER'S PAGE NO. 3 E0 S3

0074				10,2203		BANK 10	
0075	REF	1		05,2000		STLOC PRANDRES	
0076				05,2347		BANK	
0077	REF	3	LAST	128	E3,1400	EBANK= LST1	
0076	REF	1				COUNT 05/START	
0079				05,2347	0 0004 0	SLAP1 INHINT	
0080	REF	1		05,2350	0 2767 0	TC STARTSUB	
0081	REF	1		05,2351	1 2356 1	STARTSW TCP SKIPSIM	
0082	REF	19	LAST	146	05,2352	3 4675 1 STARTSIM CAP BIT14	
0083	REF	1		05,2353	0 5042 1	TC PINDVAC	
0084				05,2354	77777 0	SIM2CADR OCT 77777	
0085				05,2355	77777 0	OCT 77777	
0086	REF	19	LAST	169	05,2356	3 1036 0 SKIPSIM CA DSPTAB +11D	
00861	REF	1		05,2357	7 4726 1	MASK BITS4d6	
00862	REF	17	LAST	163	05,2360	6 4674 0 AD BIT15	
0087	REF	20	LAST	179	05,2361	55*036 1 TS DSPTAB +11D	
0088	REF	10	LAST	162	05,2362	3 4714 1 CAP ZERO	
0089	REF	2	LAST	60	05,2363	55*365 1 TS ERCOUNT	
0092	REF	1		05,2364	54 375 1	TS FAILREG	
0093	REF	2	LAST	179	05,2365	54 376 1 TS FAILREG +1	
0094	REF	3	LAST	179	05,2366	54 377 0 TS FAILREG +2	
0096	REF	3	LAST	173	05,2367	55*154 1 TS REDOCTR	
0100	REF	1		05,2370	4 4603 1	CS PRIO12	
0101	REF	10	LAST	134	05,2371	55*302 0 TS DSRUPTSW	
0102	REF	11	LAST	179	05,2372	3 4714 1 DOPSTART CAP ZERO	
0103	REF	2	LAST	80	05,2373	55*360 1 TS ERSTORE	
0104	REF	2	LAST	60	05,2374	55*362 0 TS SMOE	
01045	REF	2	LAST	63	05,2375	55*501 0 TS UPSVFLAG	
01046				05,2376	0 0006 1	EXTEND	
01047	REF	1		05,2377	01 005 0	WRITE CHAN5	
01048				05,2400	0 0006 1	EXTEND	
01049	REF	1		05,2401	01 006 0	WRITE CHAN6	
0105				05,2402	0 0006 1	EXTEND	
0106	REF	6	LAST	154	05,2403	01 011 0	WRITE DSALMOUT
0107				05,2404	0 0006 1	EXTEND	
0108	REF	16	LAST	165	05,2405	01 012 0	WRITE CHAN12
0109				05,2406	0 0006 1	EXTEND	
0110	REF	1		05,2407	01 013 1	WRITE CHAN13	
0111				05,2410	0 0006 1	EXTEND	
0112	REF	4	LAST	165	05,2411	01 014 0	WRITE CHAN14
0114	REF	7	LAST	160	05,2412	55*316 0	TS WTOPTION
0116	REF	2	LAST	71	05,2413	54 332 1	TS DNLSTCOO

FRESH START. COMES HERE FROM PINBALL.
SUBROUTINE DOES MOST OF THE WORK.

PATCH....TCP STARTSIM...FOR SIMULATION

PATCH 2CADR (AND EBANK DESIGNATION) OF
SIMULATION START ADDRESS.

REQUESTED FRESH START.

SAME STORY ON ZEROING FAILREG.

DO A FRESH START.
***** MUST NOT BE REMOVED FROM DOPSTART
***** MUST NOT BE REMOVED FROM DOPSTART
UPDATE STATE VECTOR REQUEST FLAGWORD

TURN OFF RCS JETS

TURN OFF RCS JETS

ZERO CHANNEL 11

ZERO CHANNEL 12

ZERO CHANNEL 13

ZERO CHANNEL 14



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 26, 1966 KOOLADE .069 PAGE 160

L FRESH START AND RESTART

USER=8 PAGE NO. 4 E3 S3

0117	REP	1		05,2414	54 371 0	TS	NVSAVE
0118	REP	1		05,2415	55=071 1	TS	EBANKTEM
0120	REP	1		05,2416	55=130 0	TS	RATEINDX
01201	REP	2	LAST 76	05,2417	55=126 1	TS	TRONCNT
01202	REP	2	LAST 171	05,2420	55=125 1	TS	VHPCNT
01203	REP	1		05,2421	55=044 1	TS	EXTVBACT
01204	REP	21	LAST 179	05,2422	4 1036 1	CS	DSPTAB +11D
012045	REP	2	LAST 179	05,2423	7 4726 1	MASK	BITS4d6
01205	REP	38	LAST 164	05,2424	10 000 0	CCS	A
01206				05,2425	0 2431 0	TC	+4
01207	REP	3	LAST 160	05,2426	3 4726 0	CA	BITS4d6
01208				05,2427	0 0006 1	EXTEND	
01209	REP	19	LAST 179	05,2430	05 012 1	WOR	CHAN12
0121	REP	1		05,2431	0 2474 1	TC	MR.KLEAN
01215	REP	12	LAST 179	05,2432	4 4714 0	CS	ZERO
01216	REP	1		05,2433	55=011 1	TS	MODREG
01217	REP	1		05,2434	3 4371 0	CAP	PRIO30
01218	REP	1		05,2435	54 366 0	TS	RESTRG
0122	REP	1		05,2436	3 3167 1	CAP	IM30INIF
0123	REP	34	LAST 173	05,2437	55=320 0	TS	IMODES30
0126	REP	3	LAST 159	05,2440	3 7716 0	CAP	NEGONE
0127	REP	15	LAST 165	05,2441	55=303 1	TS	OPTIND
0128	REP	1		05,2442	3 3172 0	CAP	OPTINITP
0129	REP	28	LAST 175	05,2443	55=331 0	TS	OPTMODES
0130	REP	1		05,2444	3 4763 1	CAP	IM33INIT
0131	REP	17	LAST 161	05,2445	55=321 1	TS	IMODES33
0132				05,2446	0 0006 1	EXTEND	
0133	REP	1		05,2447	3 3146 1	DCA	TSIDLER
0134	REP	2	LAST 128	05,2450	53=313 0	DXCH	TSLOC
0135				05,2451	0 0006 1	EXTEND	
0136	REP	1		05,2452	3 3175 1	DCA	SWINIT
0137	REP	24	LAST 175	05,2453	52 075 1	DXCH	STATE
0139				05,2454	0 0006 1	EXTEND	
0140	REP	2	LAST 160	05,2455	3 3177 0	DCA	SWINIT +2
01405	REP	25	LAST 160	05,2456	52 077 0	DXCH	STATE +2
0141				05,2457	0 0006 1	EXTEND	
0142	REP	3	LAST 160	05,2460	3 3201 1	DCA	SWINIT +4
0143	REP	26	LAST 160	05,2461	52 101 0	DXCH	STATE +4
0144				05,2462	0 0006 1	EXTEND	
0145	REP	4	LAST 160	05,2463	3 3203 0	DCA	SWINIT +6
0146	REP	27	LAST 160	05,2464	52 103 1	DXCH	STATE +6

THE IMU WAS IN COARSE ALIGN IN GIMBAL LOCK, SO PUT IT BACK INTO COARSE ALIGN.

FRESH START IMU INITIALIZATION.

KILL COARSE OPTICS

LET TS IDLE.

INITIALIZE SWITCHES ONLY ON FRESH START.



L FRESH START AND RESTART

USER'S PAGE NO. 5 E3 83

01462				05,2465	0 0008 1	EXTEND	
01484	REF	5	LAST	180	05,2466	3 3205 0	DCA SWINIT +8D
01466	REF	28	LAST	180	05,2467	52 105 1	DXCH STATE +8D
0147	REF	6	LAST	181	05,2470	3 3206 0	CA SWINIT +10D
0148	REF	29	LAST	181	05,2471	54 106 1	TS STATE +10D
0155	REF	2	LAST	139	05,2472	0 4574 0	ENDRSTRT TC POSTJUMP
0156	REF	1			05,2473	03225 1	CADR DUMMYJOB + 2 DOES A RELINT. (IN A SWITCHED BANK.)
0157				05,2474	0 0004 0	MR.KLEAN INHINT	
01571				05,2475	0 0006 1	EXTEND	
0158	REF	3	LAST	184	05,2476	3 4714 1	DCA NEG0
0159	REF	1			05,2477	52 755 1	DXCH -PHASE2
0160				05,2500	0 0008 1	POCKLEAN EXTEND	
0161	REF	4	LAST	181	05,2501	3 4714 1	DCA NEG0
0162	REF	1			05,2502	52 761 0	DXCH -PHASE4
0163				05,2503	0 0006 1	EXTEND	
0164	REF	5	LAST	181	05,2504	3 4714 1	DCA NEG0
0165	REF	1			05,2505	52 753 1	DXCH -PHASE1
0166				05,2506	0 0006 1	V37KLEAN EXTEND	
0167	REF	6	LAST	181	05,2507	3 4714 1	DCA NEG0
0168	REF	1			05,2510	52 757 0	DXCH -PHASE3
0169				05,2511	0 0008 1	EXTEND	
0170	REF	7	LAST	181	05,2512	3 4714 1	DCA NEG0
0171	REF	1			05,2513	52 783 1	DXCH -PHASE5
0172				05,2514	0 0006 1	EXTEND	
0173	REF	8	LAST	181	05,2515	3 4714 1	DCA NEG0
0174	REF	1			05,2518	52 765 1	DXCH -PHASE8
0175	REF	15	LAST	184	05,2517	0 0002 0	TC 0



L FRESH START AND RESTART

USER'S PAGE NO. 6 E3 83

P0177 COMES HERE FROM LOCATION 4000, GOJAM. RESTART ANY PROGRAMS WHICH MAY HAVE BEEN RUNNING AT THE TIME.

0179 REF 4 LAST 179 05,2520 25=154 0 GOPROG INCR REDOCTR ADVANCE RESTART COUNTER.

0180 REF 16 LAST 181 05,2521 22 002 0 LXCH 0
01805 05,2522 0 0006 1 EXTEND
01806 REF 1 05,2523 04 007 1 ROR SUPERBANK
0181 REF 3 LAST 173 05,2524 53=433 0 DXCH RSEBO
0182 REF 2 LAST 179 05,2525 0 2767 0 TC STARTSUB

R0183
R0185
R0187
R0189
R0191

ERASCHK TEMPORARILY STORES THE CONTENTS OF TWO ERASABLE LOCATIONS, X AND X+1 INTO SKEEP5 AND SKEEP6. IT ALSO STORES X INTO SKEEP7 AND ERSTORE. IF ERASCHK IS INTERRUPTED BY A RESTART, C(ERSTORE) SHOULD EQUAL C(SKEEP7), AND BE A + NUMBER LESS THAN 2000 OCT. OTHERWISE C(ERSTORE) SHOULD EQUAL +0..

0192 REF 2 LAST 131 05,2526 3 4364 1
0193 REF 3 LAST 179 05,2527 7 1360 1
0194 05,2530 0 0006 1
0195 05,2531 1 2533 1
0196 REF 1 05,2532 1 2372 1
0197 REF 4 LAST 182 05,2533 4 1360 1
0198 05,2534 0 0006 1
0199 REF 1 05,2535 1 2552 0
0200 REF 1 05,2536 6 1377 0
0201 05,2537 0 0006 1
0202 05,2540 1 2542 1
0203 REF 2 LAST 182 05,2541 1 2372 1
0204 REF 2 LAST 80 05,2542 3 1374 0
0205 REF 1 05,2543 54 003 0
0206 05,2544 0 0006 1
0207 REF 2 LAST 80 05,2545 3 1376 1
0208 REF 2 LAST 182 05,2546 51=377 0
0209 05,2547 52 001 1
0210 REF 13 LAST 180 05,2550 3 4714 1
0211 REF 5 LAST 182 05,2551 55=360 1
0212 REF 18 LAST 179 05,2552 3 4674 0
0213 05,2553 0 0006 1
0214 REF 3 LAST 156 05,2554 03 033 1
0215 05,2555 0 0006 1
0216 REF 1 05,2556 1 2564 0

CAP HIS
MASK ERSTORE
EXTEND
BZF +2
TCP DOPSTART
CS ERSTORE
EXTEND
BZF DORSTART
AD SKEEP7
EXTEND
BZF +2
TCP DOPSTART
CA SKEEP4
TS ERANK
EXTEND
DCA SKEEP5
INDEX SKEEP7
DXCH 0000
CA ZERO
TS ERSTORE
DORSTART CA BIT15
EXTEND
WAND CHAN33
EXTEND
BZF BUTTONS

IF ERSTORE NOT = +0 OR +N LESS THAN 2K,
DOUBT E MEMORY AND DO A FRESH START.

= +0 CONTINUE WITH RESTART.

= SKEEP7, RESTORE E MEMORY.
NOT= SKEEP7, DOUBT E MEM, DO FRESH START.

ERANK OF E MEMORY THAT WAS UNDER TEST.
(NOT DXCH SINCE THIS MIGHT HAPPEN AGAIN)

E MEMORY RESTORED.

TEST OSC FAIL BIT TO SEE IF WE HAVE
HAD A POWER TRANSIENT. IF SO, ATTEMPT
A RESTART. IF NOT, CHECK THE PRESENT
STATE OF AGC WARNING.

IF AGC WARNING ON (BIT = 0), DO A FRESH
START ON THE ASSUMPTION THAT WE ARE IN A
RESTART LOOP.

0222 REF 1 05,2564 0 2744 1 BUTTONS TC LIGHTSET
A0223

EXIT
MARK REJECT DEPRESSED SIMULTANEOUSLY



L FRESH START AND RESTART

USER'S PAGE NO. 7 E3 S3

0238	REF	1		05,2565	3 0102 1	ELRSKIP	CA	FLAGWRD6-	RESTART AUTOPILOTS
0239				05,2566	0 0008 1		EXTEND		
0240	REF	12	LAST	157	05,2567	7 4710 1	MP	BIT3	BITS 15,14 00 TSIDLOC
0241	REF	4	LAST	160	05,2570	7 6211 1	MASK	SIX	01 REDORCS
0242				05,2571	0 0008 1		EXTEND		10 REDOTVC
0243	REF	39	LAST	160	05,2572	5 0000 1	INDEX	A	11 REDOSAT
0244	REF	2	LAST	180	05,2573	3 3146 1	DCA	TSIDLER	
0245	REF	3	LAST	180	05,2574	53*313 0	DXCH	TSLOC	
0246	REF	1		05,2575	4 4675 0		CS	INTFLBIT	
0247	REF	1		05,2576	7 0106 1		MASK	RASFLAG	
0248	REF	2	LAST	183	05,2577	54 106 1	TS	RASFLAG	
0256	REF	29	LAST	160	05,2600	3 1331 1	CA	OPTMODES	
0257	REF	1		05,2601	7 3173 0		MASK	OPTINITR	
0258	REF	17	LAST	161	05,2602	6 4704 0	AD	BIT7	
0259	REF	30	LAST	183	05,2603	55*331 0	TS	OPTMODES	
0260	REF	20	LAST	161	05,2604	3 4705 1	CAP	BIT8	
0261	REF	18	LAST	160	05,2605	7 1321 1	MASK	IMODES33	
0262	REF	2	LAST	160	05,2606	6 4763 1	AD	IM33INIT	
0263	REF	19	LAST	183	05,2607	55*321 1	TS	IMODES33	
0264	REF	1		05,2610	3 3171 0		CA	9,6,4	LEAVE PROG ALARM, GIMBAL LOCK, NO ATT
0265	REF	22	LAST	160	05,2611	7 1036 1	MASK	DSPTAB +11D	LAMPS INTACT ON HARDWARE RESTART
0266	REF	19	LAST	162	05,2612	6 4674 0	AD	BIT15	
0267	REF	23	LAST	163	05,2613	57*036 0	XCH	DSPTAB +11D	
0268	REF	15	LAST	145	05,2614	7 4707 1	MASK	BIT4	IF NO ATT LAMP WAS ON, LEAVE ISS IN
0269				05,2615	0 0006 1		EXTEND		COURSE ALIGN
0270	REF	1		05,2616	1 2625 0		BZF	NOCOARSE	
0271	REF	7	LAST	150	05,2617	0 4633 0	TC	IPNKCALL	IF NO ATT LAMP ON, RETURN ISS TO
0272	REF	2	LAST	143	05,2620	16746 0	CADR	SETCOARS	COARSE ALIGN
02721	REF	5	LAST	183	05,2621	3 6211 0	CAP	SIX	
02722	REF	6	LAST	159	05,2622	0 5140 1	TC	WAITLIST	
02723	REF	4	LAST	144	E3,1474		ERANK=	CDUIND	
02724	REF	2	LAST	144	05,2623	02742 1	ZCADR	CA+RCE	
02724				05,2624	16063 0				
0273	REF	1		05,2625	3 3155 0	NOCOARSE	CAP	IFAILINH	LEAVE FAILURE INHIBITS INTACT ON
0274	REF	35	LAST	180	05,2626	7 1320 0	MASK	IMODES30	HARDWARE RESTART. RESET ALL
0275	REF	1		05,2627	6 3170 1		AD	IM30INIR	FAILURE CODES.
0276	REF	36	LAST	183	05,2630	55*320 0	TS	IMODES30	
0277	REF	2	LAST	131	05,2631	4 0101 0	CS	FLAGWRD5	
0278	REF	18	LAST	183	05,2632	7 4704 1	MASK	BIT7	
0279	REF	40	LAST	183	05,2633	10 000 0	CCS	A	
0280	REF	1		05,2634	1 2657 0		TCF	GOPROG3	
0281	REF	14	LAST	163	05,2635	3 4676 1	CAP	BIT13	
0282				05,2636	0 0006 1		EXTEND		
0283	REF	7	LAST	179	05,2637	05 011 1	WOR	DSALMOUT	TURN ENGINE ON



L. FRESH START AND RESTART

USER-S PAGE NO. 8 E3 83

0284	REP	2	LAST	183	05,2640	1 2657 0		TC	GOPROG3	
0285					05,2641	0 0004 0	ENEMA	INHINT		
028505	REP	2	LAST	182	05,2642	0 2744 1		TC	LIGHTSET	
02851	REP	1			05,2643	0 2777 1		TC	STARTSB2	
0289	REP	1			05,2644	4 3162 0		CS	INTMAX	
02891	REP	3	LAST	183	05,2645	7 0108 1		MASK	RASFLAG	
0290	REP	4	LAST	184	05,2646	54 106 1		TS	RASFLAG	
02901	REP	2	LAST	183	05,2647	4 0102 0		CS	FLAGWRD6	IS TVC ON
02902	REP	1			05,2650	7 4105 0		MASK	OCT60000	
02903					05,2651	0 0008 1		EXTEND		
02904	REP	3	LAST	184	05,2652	6 2657 1		BZMP	GOPROG3	NO
02905	REP	2	LAST	127	05,2653	3 4731 0		CAP	.5SEC	
02906	REP	7	LAST	183	05,2654	0 5140 1		TC	WAITLIST	YES, CALL TVCEXEC TASK WHICH WAS KILLED IN STARTSB2.
02907	REP	1			05,1742			ERANK=	BZERO	
02908	REP	1			05,2655	02880 0		ZCADR	TVCEXEC	
02908	REP	1			05,2656	34088 0				
0291	REP	1			05,2657	3 4715 0	GOPROG3	CAP	NUMGRPS	VERIFY PHASE TABLE AGREEMENTS
0292	REP	1			05,2660	54 181 0	PCLOOP	TS	MPAC +5	
0293					05,2661	6 0000 1		DOUBLE		
0294					05,2662	0 0008 1		EXTEND		
0295	REP	41	LAST	183	05,2663	5 0000 1		INDEX	A	
0296	REP	2	LAST	181	05,2664	3 0753 0		DCA	-PHASE1	COMPLEMENT INTO A, DIRECT INTO L.
0297					05,2665	0 0008 1		EXTEND		
0298	REP	9	LAST	183	05,2666	08 001 0		RXOR	LCHAN	RESULT MUST BE -0 FOR AGREEMENT.
0299	REP	42	LAST	184	05,2667	10 000 0		CCS	A	
0300	REP	1			05,2670	1 2737 1		TC	PTBAD	RESTART FAILURE.
0301	REP	2	LAST	184	05,2671	1 2737 1		TC	PTBAD	
0302	REP	3	LAST	184	05,2672	1 2737 1		TC	PTBAD	
0303	REP	2	LAST	184	05,2673	10 181 0		CCS	MPAC +5	PROCESS ALL RESTART GROUPS.
0304	REP	1			05,2674	1 2680 1		TC	PCLOOP	
0305	REP	3	LAST	184	05,2675	54 182 0		TS	MPAC +6	SET TO +0.
0306	REP	1			05,2676	0 5247 0		TC	MMSPLAY	DISPLAY MAJOR MODE
0307					05,2677	0 0004 0		INHINT		RELINT DONE IN MMSPLAY
03071	REP	3	LAST	184	05,2700	30 102 1		CAB	FLAGWRD6	IS RCS DAP RUNNING (BITS 15 14 OF FLAGWRD6 = 01)
030715	REP	2	LAST	184	05,2701	7 4105 0		MASK	OCT60000	YES, DO STOPRATE
03072					05,2702	0 0008 1		EXTEND		NO, SKIP TO NXTRST -1
030725	REP	1			05,2703	6 2712 1		BZMP	NXTRST -1	STOPRATE IS DONE IN ERANK 6
03073	REP	1			05,2704	3 4752 0		CAP	ERANK6	
03074	REP	2	LAST	182	05,2705	54 003 0		TS	ERANK	
03075	REP	8	LAST	183	05,2706	0 4833 0		TC	IRKCALL	ZERO DELCDS, WHODYS, AND BIASES THUS STOPPING AUTOMATIC MANEUVERING
03076	REP	1			05,2707	45245 0		CADR	STOPRATE	
03077	REP	1			05,2710	3 4744 1		CAP	ERANK3	
03078	REP	3	LAST	184	05,2711	54 003 0		TS	ERANK	
0308	REP	2	LAST	184	05,2712	3 4715 0		CAP	NUMGRPS	SEE IF ANY GROUPS RUNNING.



L FRESH START AND RESTART

USER'S PAGE NO. 9 E3 53

0309	REF	4	LAST	184	05,2713	54 161 0	NXTRST	TS	MPAC +5	
0310					05,2714	6 0000 1		DOUBLE		
0311	REF	43	LAST	184	05,2715	50 000 1		INDEX	A	
0312	REF	1			05,2716	10 753 1		CCS	PHASE1	
0313	REF	1			05,2717	1 2721 0		TCF	PACTIVE	
0314	REF	1			05,2720	1 2726 1		TCF	PINACT	
0315	REF	5	LAST	185	05,2721	54 154 0	PACTIVE	TS	MPAC	
0316	REF	6	LAST	185	05,2722	24 154 1		INCR	MPAC	
0317	REF	7	LAST	185	05,2723	24 182 1		INCR	MPAC +6	
0318	REF	1			05,2724	3 2743 0		CA	RACTCADR	
0319	REF	1			05,2725	0 4581 1		TC	SWCALL	
0320	REF	8	LAST	185	05,2726	10 161 0	PINACT	CCS	MPAC +5	
0321	REF	2	LAST	184	05,2727	1 2713 1		TCF	NXTRST	
0326	REF	9	LAST	185	05,2730	10 162 0		CCS	MPAC +6	
0327	REF	1			05,2731	1 2472 0		TCF	ENDRSTRT	
0328	REF	20	LAST	183	05,2732	3 4674 0		CAP	BIT15	
0329	REF	2	LAST	180	05,2733	7 1011 1		MASK	MODREG	
03291					05,2734	0 0006 1		EXTEND		
03292	REF	1			05,2735	1 4108 0		BZF	GOTOPOOH	
03293	REF	2	LAST	185	05,2736	1 2472 0		TCF	ENDRSTRT	
0336	REF	10	LAST	182	05,2737	0 5537 0	PIRAD	TC	ALARM	
0337					05,2740	01107 0		OCT	1107	
0338	REF	4	LAST	182	05,2741	1 2372 1		TCF	DOFSTART	
R0339	***** ***** *****									
R0340										
R0341	DO NOT USE GOPROG2 OR ENEMA WITHOUT CONSULTING POOH PEOPLE									
R0342										
0343	REF	1			05,2641		GOPROG2	EQUALS	ENEMA	
0344	REF	15	LAST	183	4678		OCT10000	=	BIT13	
0345	REF	2	LAST	180	4371		OCT30000	=	PRIO30	
0348					05,2742	07777 1	OCT7777	OCT	7777	
0347	REF	1			05,2743	03520 0	RACTCADR	CADR	RESTARTS	
0348	REF	19	LAST	183	05,2744	3 4704 0	LIGHTSET	CAP	BIT7	
0349					05,2745	0 0006 1		EXTEND		
0350	REF	1			05,2748	02 018 1		RAND	NAVKEYIN	
0351					05,2747	0 0006 1		EXTEND		
0352	REF	1			05,2750	1 2764 1		BZF	NONAVKEY	
0353	REF	1			05,2751	3 4362 1		CAP	OCT37	
0354					05,2752	0 0006 1		EXTEND		
0355	REF	2	LAST	185	05,2753	02 018 1		RAND	NAVKEYIN	
0356	REF	1			05,2754	8 3168 0		AD	-ELR	
0357					05,2755	0 0006 1		EXTEND		
0358	REF	2	LAST	185	05,2756	1 2765 0		BZF	NONAVKEY +1	
0359					05,2757	0 0006 1		EXTEND		
0360	REF	1			05,2760	00 015 0		READ	MMKEYIN	

PNZ - GROUP ACTIVE.
+0 - GROUP NOT RUNNING.ABS OF PHASE.
INDICATE GROUP DEMANDS PRESENT.

MUST RETURN TO SWRETURN.

PROCESS ALL RESTART GROUPS.

NO, CHECK PHASE ACTIVITY FLAG
PHASE ACTIVE
IS MODE -0NO
YES
SET ALARM TO SHOW PHASE TABLE FAILURE.

IN R2).

DOFSTART IF MARK REJECT AND EITHER
ERROR LIGHT RESET BUTTONS ARE DEPRESSED

NO MARK REJECT

NAV DSKY KEYCODES, MARK, MARK REJECT

MAIN DSKY KEYCODES



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1966 KOOLADE .069 PAGE 186

L FRESH START AND RESTART

USER=5 PAGE NO. 10 E3 S3

0361	REF	2	LAST	165	05,2761	6 3166 0	AD	-ELR
0362					05,2762	0 0006 1	EXTEND	
0363					05,2763	1 2765 0	BZF	+2
0364	REF	17	LAST	162	05,2764	0 0002 0	NONAVKEY TC	O
0365	REF	3	LAST	162	05,2765	0 2767 0	TC	STARTSUB
0366	REF	5	LAST	165	05,2766	1 2372 1	TCP	DOFSTART
0367	REF	1			05,2767	3 3156 0	STARTSUB CAP	LDNPHAS1
0368	REF	1			05,2770	54 335 0	TS	DNIMGOTO
A0369								
A0370								
0371	REF	5	LAST	164	05,2771	3 4672 0	CA	POSMAX
0372	REF	1			05,2772	54 026 1	TS	TIME3
0373	REF	1			05,2773	6 7715 0	AD	MINUS2
0374	REF	4	LAST	133	05,2774	54 027 0	TS	TIME4
0375	REF	4	LAST	160	05,2775	6 7716 0	AD	NEGONE
0376	REF	2	LAST	127	05,2776	54 030 0	TS	TIME5
0377	REF	1			05,2777	3 3163 0	STARTSUB2 CAP	OCT77603
0378					05,3000	0 0006 1	EXTEND	
0379	REF	6	LAST	163	05,3001	03 011 1	WAND	DSALMOUT
0383	REF	1			05,3002	3 3164 1	CAP	OCT74777
0384					05,3003	0 0006 1	EXTEND	
0385	REF	2	LAST	179	05,3004	03 013 0	WAND	CHAN13
03861	REF	21	LAST	162	05,3005	4 4675 0	CS	BIT14
03862	REF	1			05,3006	7 0076 1	MASK	FLAGWRD2
03863	REF	2	LAST	166	05,3007	54 076 1	TS	FLAGWRD2
0389	REF	4	LAST	179	E3,1400		EBANK=	LST1
0390	REF	1			05,3010	3 3165 0	CAP	STARTES
0391	REF	4	LAST	164	05,3011	54 003 0	TS	EBANK
0392	REF	3	LAST	163	05,3012	3 4673 1	CAP	NEG1/2
0393	REF	5	LAST	166	05,3013	55=407 1	TS	LST1 +7
0394	REF	6	LAST	166	05,3014	55=406 0	TS	LST1 +6
0395	REF	7	LAST	166	05,3015	55=405 0	TS	LST1 +5
0396	REF	6	LAST	166	05,3016	55=404 1	TS	LST1 +4
0397	REF	9	LAST	166	05,3017	55=403 0	TS	LST1 +3
0398	REF	10	LAST	166	05,3020	55=402 1	TS	LST1 +2
0399	REF	11	LAST	166	05,3021	55=401 1	TS	LST1 +1
0400	REF	12	LAST	166	05,3022	55=400 0	TS	LST1
0401	REF	1			05,3023	4 5173 0	CS	ENDTASK
0402	REF	1			05,3024	55=410 1	TS	LST2
0403	REF	2	LAST	166	05,3025	55=412 0	TS	LST2 +2
0404	REF	3	LAST	166	05,3026	55=414 0	TS	LST2 +4
0405	REF	4	LAST	166	05,3027	55=416 1	TS	LST2 +6
0406	REF	5	LAST	166	05,3030	55=420 1	TS	LST2 +8D

SET POINTER SO NEXT 20MS DOWNRUPT WILL
CAUSE THE CURRENT DOWNLIST TO BE
INTERRUPTED AND START SENDING FROM THE
BEGINNING OF THE CURRENT DOWNLIST.

37777 TO TIME3.

37775 TO TIME4.

37774 TO TIME5.

TURN OFF UPLINK ACTY, TEMP CAUTION, KR,
FLASH, OP. ERROR. LEAVE OTHERS UNCHANGED

TURN OFF TEST ALARMS, STANDBY ENABLE.

CLEAR R21MARK
R21 SETS R21MARK AND RESETS IT IF R21
IS TERMINATED NORMALLY

SET FOR E3

INITIALIZE WAITLIST DELTA-TS.



L FRESH START AND RESTART

USER=3 PAGE NO. 11 E3 S3

0407	REP	6	LAST	188	05,3031	55=422 0	TS	LST2 +10D	
0408	REP	7	LAST	187	05,3032	55=424 0	TS	LST2 +12D	
0409	REP	8	LAST	187	05,3033	55=428 1	TS	LST2 +14D	
0410	REP	9	LAST	187	05,3034	55=430 0	TS	LST2 +16D	
0411	REP	2	LAST	186	05,3035	4 5174 1	CS	ENDTASK +1	
0412	REP	10	LAST	187	05,3038	55=411 0	TS	LST2 +1	
0413	REP	11	LAST	187	05,3037	55=413 1	TS	LST2 +3	
0414	REP	12	LAST	187	05,3040	55=415 1	TS	LST2 +5	
0415	REP	13	LAST	187	05,3041	55=417 0	TS	LST2 +7	
0416	REP	14	LAST	187	05,3042	55=421 0	TS	LST2 +9D	
0417	REP	15	LAST	187	05,3043	55=423 1	TS	LST2 +11D	
0418	REP	16	LAST	187	05,3044	55=425 1	TS	LST2 +13D	
0419	REP	17	LAST	187	05,3045	55=427 0	TS	LST2 +15D	
0420	REP	18	LAST	187	05,3046	55=431 1	TS	LST2 +17D	
0421	REP	14	LAST	182	05,3047	4 4714 0	CS	ZERO	MAKE ALL EXECUTIVE REGISTER SETS
0422	REP	1			05,3050	54 187 0	TS	PRIORITY	AVAILABLE.
0423	REP	2	LAST	187	05,3051	54 203 1	TS	PRIORITY +12D	
0424	REP	3	LAST	187	05,3052	54 217 1	TS	PRIORITY +24D	
0425	REP	4	LAST	187	05,3053	54 233 1	TS	PRIORITY +36D	
0426	REP	5	LAST	187	05,3054	54 247 1	TS	PRIORITY +48D	
0427	REP	6	LAST	187	05,3055	54 283 1	TS	PRIORITY +80D	
0428	REP	7	LAST	187	05,3058	54 277 1	TS	PRIORITY +72D	
0429	REP	11	LAST	179	05,3057	55=302 0	TS	DSRUPTSW	
0430	REP	1			05,3080	54 067 1	TS	NEWJOB	SHOWS NO ACTIVE JOBS.
0431	REP	1			05,3081	3 3160 0	CAP	VAC1ADRC	MAKE ALL VAC AREAS AVAILABLE.
0432	REP	1			05,3062	54 400 1	TS	VAC1USE	
0433	REP	1			05,3063	6 3181 1	AD	LTHVACA	
0434	REP	1			05,3064	54 454 0	TS	VAC2USE	
0435	REP	2	LAST	187	05,3065	6 3161 1	AD	LTHVACA	
0436	REP	1			05,3066	54 530 0	TS	VAC3USE	
0437	REP	3	LAST	187	05,3087	6 3181 1	AD	LTHVACA	
0438	REP	1			05,3070	54 604 1	TS	VAC4USE	
0439	REP	4	LAST	187	05,3071	6 3181 1	AD	LTHVACA	
0440	REP	1			05,3072	54 660 0	TS	VAC5USE	
0441	REP	1			05,3073	3 4377 0	CAP	TEN	BLANK DSKY REGISTERS (PROGRAM,VERB,NOUN,
A0442									R1,R2,R3)
0443	REP	10	LAST	185	05,3074	54 154 0	DSPOFF	MPAC	
0444	REP	9	LAST	81	05,3075	4 4677 1	CS	BIT12	
0445	REP	11	LAST	187	05,3076	50 154 1	INDEX	MPAC	
0446	REP	24	LAST	183	05,3077	55=023 0	TS	DSPTAB	
0447	REP	12	LAST	187	05,3100	10 154 0	CCS	MPAC	
0448	REP	1			05,3101	1 3074 0	TCF	DSPOFF	
0449	REP	1			05,3102	55=141 0	TS	DELAYLOC	
0450	REP	2	LAST	187	05,3103	55=142 0	TS	DELAYLOC +1	
0451	REP	3	LAST	187	05,3104	55=143 1	TS	DELAYLOC +2	



L FRESH START AND RESTART

USER=S PAGE NO. 12 E3 S3

04515	REP	4	LAST	187	05,3105	55=144 0	TS	DELAYLOC +3
0452	REP	1			05,3108	55=073 0	TS	R1SAVE
0453	REP	1			05,3107	54 045 1	TS	INLINK
0454	REP	7	LAST	131	05,3110	54 776 0	TS	DSPONT
0455	REP	1			05,3111	55=042 1	TS	CADRSTOR
0456	REP	1			05,3112	55=013 0	TS	REQRET
0457	REP	1			05,3113	55=015 0	TS	CLPASS
0458	REP	1			05,3114	55=012 1	TS	DSPLOCK
0459	REP	1			05,3115	55=020 0	TS	MONSAVE
0460	REP	1			05,3118	55=021 1	TS	MONSAVE1
0461	REP	1			05,3117	55=001 0	TS	VERBREG
0462	REP	1			05,3120	55=002 0	TS	NOUNREG
0463	REP	1			05,3121	55=043 0	TS	DSPLIST
0464	REP	1			05,3122	55=330 1	TS	MARKSTAT
0465	REP	1			05,3123	55=322 1	TS	IMUCADR
0466	REP	1			05,3124	55=323 0	TS	OPTCADR
0467	REP	1			05,3125	55=324 1	TS	RADCADR
0468	REP	2	LAST	79	05,3126	55=325 0	TS	ATTCADR
0469	REP	1			05,3127	55=304 0	TS	LOYRO
0470	REP	1			05,3130	54 100 1	TS	FLAGWRD4
0471	REP	1			05,3131	3 4717 1	CAP	NOUTCON
0472	REP	5	LAST	133	05,3132	55=018 0	TS	NOUT
0473	REP	22	LAST	186	05,3133	3 4675 1	CAP	BIT14
0474	REP	2	LAST	180	05,3134	7 1044 1	MASK	EXTVRACT
0475	REP	3	LAST	188	05,3135	55=044 1	TS	EXTVRACT
0476	REP	1			05,3136	3 3157 1	CAP	LESCAK
0477	REP	2	LAST	80	05,3137	55=361 0	TS	SELFRET
0478	REP	1			05,3140	4 4374 1	CS	VD1
0479	REP	2	LAST	132	05,3141	54 777 1	TS	DSPCOUNT
0480	REP	18	LAST	186	05,3142	0 0002 0	TS	IDLOC
0481	REP	10	LAST	164	05,3143	3 0001 0	CA	L
0482	REP	1			05,3144	1 5225 0	TCF	NOORSM +1
0483	REP	2	LAST	103	E8,1672		EBANK=	OGANOW
0484	REP	1			05,3145	03143 1	2CADR	TS IDLOC
0484	REP	1			05,3146	12068 1		
0485	REP	3	LAST	188	E8,1672		EBANK=	OGANOW
0486	REP	1			05,3147	02071 0	2CADR	REDORCS
0486	REP	1			05,3150	42068 1		
0487	REP	4	LAST	188	E8,1672		EBANK=	OGANOW
0488	REP	1			05,3151	03165 0	2CADR	REDOTVC
0488	REP	1			05,3152	34088 0		
0489	REP	5	LAST	188	E8,1672		EBANK=	OGANOW
0490	REP	1			05,3153	02765 1	2CADR	REDOSAT
0490	REP	1			05,3154	46066 0		
0491	REP				05,3155	00435 0	IPAILINH	OCT 435
0492	REP	1			05,3158	03351 0	LDNPHAS1	GENADR DNPHASE1

KILL MONITOR

KILL INTERFACE DISPLAYS

SELF CHECK GO-TO REGISTER.

TSRUPT COMES HERE EVERY 163.84 SECS
WHEN NOBODY IS USING IT.



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1966 KOOLADE .069 PAGE 169

L FRESH START AND RESTART

USER'S PAGE NO. 13

E3 S3

0493	REP	1		05,3157	03334 0	LESCHK	GENADR	SELFCHK
0494	REP	2	LAST 187	05,3160	00400 0	VAC1ADRC	ADRES	VAC1USE
0495				05,3161	00054 0	LTHVACA	DEC	44
04955				05,3162	20100 1	INTMASK	OCT	20100
0496				05,3163	77603 1	OCT77603	OCT	77603
0497				05,3164	74777 0	OCT74777	OCT	74777
0496	REP	13	LAST 166	05,3165	01400 1	STARTEB	ECADR	LST1
0499	REP	1		4715		NUMGRPS	EQUALS	FIVE
0500				05,3166	77755 0	-ELR	OCT	-22
0501				05,3167	37411 1	IM30INIF	OCT	37411
0502				05,3170	37000 0	IM30INIR	OCT	37000
0503	REP	2	LAST 155	4763		IM33INIT	=	PRIO16
0504				05,3171	00450 0	9,6,4	OCT	450
0505				05,3172	00130 0	OPTINITP	OCT	130
0506				05,3173	00430 0	OPTINITR	OCT	430
0507				05,3174	00000 1	SWINIT	OCT	0
0508				05,3175	00000 1		OCT	0
0509				05,3176	00000 1		OCT	0
0510				05,3177	00000 1		OCT	0
0511				05,3200	00000 1		OCT	0
0512				05,3201	00200 0		OCT	00200
0513				05,3202	00000 1		OCT	0
0514				05,3203	00100 0		OCT	00100
0515				05,3204	00000 1		OCT	0
0516				05,3205	00000 1		OCT	0
05162				05,3206	00000 1		OCT	0

-ERROR LIGHT RESET KEY CODE.
INHIBITS IMU FAIL FOR 5 SEC AND PIP ISSW
NO PIP OR TM FAIL SIGNALS.



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1988 KOOLADE .069 PAGE 190

L FRESH START AND RESTART

USER'S PAGE NO. 14 E3 S3

P0517 PROGRAM NAME GOTOPOOH ASSEMBLY SUNDISK
R0518 LOG SECTION FRESH START AND RESTART

R0519 FUNCTIONAL DESCRIPTION

R0520 1. DISPLAY MAJOR MODE NUMBER 00 IN DSKY REGISTER R1 AND R3. FLASH V50 N07 ON DSKY. (M M CHANGE REQUEST)
R0522 2. PERMIT A CURRENT PENDING REQUEST (FLASH ON DSKY) TO BE REPLACED (WITHOUT AN ABORT) BY THE MAJOR MODE
R0524 CHANGE REQUEST

R0525 INPUT/OUTPUT INFORMATION

R0526 A. CALLING SEQUENCE TC GOTOPOOH

R0527 B. ERASABLE INITIALIZATION NONE

R0528 C. OUTPUT FLASH VERB 50 NOUN 07 ON DSKY

R0529 D. DEBRIS L

R0530 PROGRAM ANALYSIS

R0531 A. SUBROUTINES CALLED GOPERF3, LINUS

R0532 B. NORMAL EXIT TCF ENDOPJOB

R0533 C. ALARM AND ABORT EXITS NONE

0534 4108 BLOCK 02
0535 REF 1 4000 SETLOC PPTAG10
0536 4106 BANK

0537 REF 1 COUNT 02/P00

0536 REF 1 4106 0 5301 0 GOTOPOOH TC PHASCHNG
0539 4107 00014 1 OCT 14 RESTART GOTOPOOH

0540 REF 3 LAST 181 4110 0 4574 0 TC POSTJUMP
0541 REF 1 4111 10000 0 CADR GOPOOFIX
0542 10,2203 BANK 10
0543 REF 1 04,2000 SETLOC VERB37
0544 04,2000 BANK

0545 REF 1 COUNT 04/P00

0546 REF 1 04,2000 0 2315 1 GOPOOFIX TC INITSUB
05465 REF 1 04,2001 3 2007 1 CAP V37N99
0547 REF 1 04,2002 0 4555 0 TC BANKCALL
0548 REF 1 04,2003 20624 0 CADR GOFFLASH
0549 04,2004 1 2001 0 TCF -3
0550 04,2005 1 2001 0 TCF -4



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .089 PAGE 191

L FRESH START AND RESTART

USER'S PAGE NO. 15 E3 S3

0551	04,2006	1 2001 0	TCP	-5
0552	04,2007	11343 0	V37N99 VN	3799

L FRESH START AND RESTART

USER'S PAGE NO. 16 E3 S3

R0553 PROGRAM NAME V37 ASSEMBLY SUNDISK
R0554 LOG SECTION FRESH START AND RESTART

R0555 FUNCTIONAL DESCRIPTION

- R0556 1. CHECK IF NEW PROGRAM ALLOWED. IF BIT 1 OF FLAG2(D2(NODOFLAG)) ISSET, AN ALARM 1520 IS CALLED.
- R0556 2. CHECK FOR VALIDITY OF PROGRAM SELECTED. IF AN INVALID PROGRAM IS SELECTED, THE OPERATOR ERROR LIGHT IS
- R0560 SET AND CURRENT ACTIVITY, IF ANY, CONTINUES.
- R0561 3. SERVICER IS TERMINATED IF IT HAS BEEN RUNNING.
- R0562 4. INSTALL IS EXECUTED TO AVOID INTERRUPTING INTEGRATION.
- R0563 5. THE ENGINE IS TURNED OFF AND THE DAP IS INITIALIZED FOR COAST.
- R0564 6. TRACK, UPDATE AND TARG1 FLAGS ARE SET TO ZERO.
- R0565 7. DISPLAY SYSTEM IS RELEASED.
- R0566 8. THE FOLLOWING ARE PERFORMED FOR EACH OF THE THREE CASES.
- R0567 A. PROGRAM SELECTED IS P00.
- R0566 1. RENDEZVOUS FLAG IS RESET (KILL P20).
- R0569 2. STATINT1 IS SCHEDULED BY SETTING RESTART GROUP 2.
- R0570 3. MAJOR MODE 00 IS STORED IN THE MODE REGISTER(MODREG).
- R0571 4. SUPERBANK 3 IS SELECTED.
- R0572 5. NODOFLAG IS RESET.
- R0573 6. ALL RESTART GROUPS EXCEPT GROUP 2 ARE CLEARED. CONTROL IS TRANSFERRED TO RESTART PROGRAM (GOPROG2)
- R0575 WHICH CAUSES ALL CURRENT ACTIVITY TO BE DISCONTINUED AND A 9 MINUTE INTEGRATION CYCLE TO BE
- R0577 INITIATED.
- R0576 B. PROGRAM SELECTED IS P20
- R0579 1. IF THE CURRENT MAJOR MODE IS THE SAME AS THE SELECTED NEWPROGRAM, THE PROGRAM IS RE-INITIALIZED
- R0581 VIA V37XEQ, ALL RESTART GROUPS, EXCEPT GROUP 4 ARE CLEARED.
- R0583 2. IF THE CURRENT MAJOR MODE IS NOT EQUAL TO THE NEW REQUEST, A CHECK IS MADE TO SEE IF THE REQUEST-
- R0585 ED MAJOR MODE HAS BEEN RUNNING IN THE BACKGROUND,
- R0586 AND IF IT HAS, NO NEW PROGRAM IS SCHEDULED, THE EXISTING
- R0587 P20 IS RESTARTED TO CONTINUE, AND ITS MAJOR MODE IS SET.
- R0588 3. CONTROL IS TRANSFERRED TO GOPROG2.
- R0589 C. PROGRAM SELECTED IS NEITHER P00 NOR P20
- R0590 1. V37XEQ IS SCHEDULED (AS A JOB) BY SETTING RESTART GROUP 4
- R0591 2. ALL CURRENT ACTIVITY EXCEPT RENDEZVOUS AND TRACKING IS DISCONTINUED BY CLEARING ALL RESTART
- R0593 GROUPS. GROUP 2 IS CLEARED. IF THE RENDEZVOUS FLAG IS ON P20 IS RESTARTED IN GOPROG2 VIA REDOP20.
- R0595 TO CONTINUE.

R0596 INPUT/OUTPUT INFORMATION

R0597 A. CALLING SEQUENCE

R0596 CONTROL IS DIRECTED TO V37 BY THE VERBFAN ROUTINE.
R0599 VERBFAN GOES TO C(VERBTAB+C(VERBREG)). VERB 37 = MMCHANG.
R0600 MMCHANG EXECUTES A TC POSTJUMP, CADR V37.

R0601 B. ERASABLE INITIALIZATION NONE

R0602 C. OUTPUT
R0603 MAJOR MODE CHANGE

L FRESH START AND RESTART

USER=8 PAGE NO. 17 E3 S3

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R0604      D. DEBRIS
R0605      MMNUMBER, MPAC +1, MINDEX, BASETEMP +C(MINDEX), FLAGWRD0, FLAGWRD1, FLAGWRD2, MODREG, GOLOC -1,
R0607      GOLOC, GOLOC +1, GOLOC +2, BASETEMP, -PHASE2, PHASE2, -PHASE4

R0608      PROGRAM ANALYSIS

R0609      A. SUBROUTINES CALLED
R0610      ALARM, RELDSP, PINBRNCH, INTSTALL, ENGINEF2, ALLCOAST, V37KLEAN, GOPROG2, FALTON, FINDVAC, SUPERSW,
R0612      DSPMM

R0613      B. NORMAL EXIT          TC ENDJOB

R0614      C. ALARMS          1520 (MAJOR MODE CHANGE NOT PERMITTED)

0615      4112      BLOCK 02
0616      REF 2 LAST 190      4000      SETLOC FPMAG10
0617      4112      BANK

0618      REF 1      COUNT 02/V37

0619      4112      00024 1 OCT24      MM 20
0620      4113      00031 0 OCT31      MM 25
0621      27,2000      BANK 27
0622      REF 2 LAST 190      04,2000      SETLOC VERR37
0623      04,2010      BANK

0624      REF 1      COUNT 04/V37

0625      REF 1      04,2010 54 775 0 V37      TS MMNUMBER      SAVE MAJOR MODE
0626      REF 3 LAST 185      04,2011 3 4371 0      CAP PRIO30      RESTART AT PINBALL PRIORITY
0627      REF 2 LAST 180      04,2012 54 388 0      TS RESTREG

0628      REF 37 LAST 183      04,2013 3 1320 1      CA IMODES30      IS IMU BEING INITIALIZED
0629      REF 21 LAST 183      04,2014 7 4705 0      MASK BIT6
0630      REF 44 LAST 185      04,2015 10 000 0      CCS A
0631      REF 1      04,2018 1 2070 0      TCP CANTROO

0632      REF 16 LAST 185      04,2017 3 4876 1      CAP BIT13      IS ENGINE ON
0633      04,2020 0 0008 1      EXTEND
0634      REF 9 LAST 188      04,2021 02 011 0      RAND DSALMOUT
0635      REF 45 LAST 193      04,2022 10 000 0      CCS A
0636      REF 1      04,2023 1 2030 1      TCP ROOTPOO      YES, SET UP FOR POO

0637      REF 4 LAST 184      04,2024 4 0102 0      CS FLAGWRD6      NO, IS TVC DAP ON
0638      REF 3 LAST 184      04,2025 7 4105 0      MASK OCT60000
0639      04,2026 0 0008 1      EXTEND
0640      REF 1      04,2027 6 2061 1      BZMF ISITPOO      NO, CONTINUE WITH ROO

0641      04,2030 0 0004 0      ROOTPOO INHINT
06412      REF 2 LAST 184      04,2031 3 4752 0      CAP ERANK6
    
```

L FRESH START AND RESTART

USERS PAGE NO. 16 E3 S3

0642	REP	5	LAST	166	04,2032	54 003 0	TS	EBANK		
0643	REP	3	LAST	173	04,2033	31=474 1	EBANK=	DAPDTR1		
0644	REP	1			04,2034	55=662 0	CAR	CSMASS		
0645	REP	2	LAST	103	04,2035	0 4633 0	TS	MASSMP		
0647	REP	9	LAST	164	04,2036	50737 1	TC	IBNKCALL		
0648	REP	1			04,2037	0 4633 0	CADR	SPSCOP		
0649	REP	10	LAST	194	04,2040	13207 0	TC	IBNKCALL		
0650	REP	1			04,2041	3 2402 0	CADR	MASSPROP		
0651	REP	1			04,2042	0 4633 0	CAP	3.1SEC		
0652	REP	11	LAST	194	04,2043	42011 1	TC	IBNKCALL		
0653	REP	1					CADR	RCSAPON +1		
0654	REP	12	LAST	194	04,2044	0 4633 0	TC	IBNKCALL		
0655	REP	1			04,2045	51003 0	CADR	TVCZAP	DISABLE TVC	
0656	REP	15	LAST	187	04,2046	3 4714 1	CAP	ZERO		
0657	REP	2	LAST	193	04,2047	54 775 0	TS	MMNUMBER		
0658	REP	2	LAST	189	04,2050	0 0003 1	RELINT			
0659	REP	2	LAST	190	04,2051	3 4715 0	CAP	FIVE		
0660	REP	2	LAST	190	04,2052	0 4555 0	TC	BANKCALL		
06602	REP	1			04,2053	01732 0	CADR	DELAYJOB		
06604	REP	16	LAST	194	04,2054	3 4714 1	CAP	ZERO		
06606	REP				04,2055	0 0008 1	EXTEND			
06608	REP				04,2056	01 005 0	WRITE	5		
0661	REP				04,2057	0 0006 1	EXTEND			
06615	REP				04,2060	01 008 0	WRITE	6		
0662	REP	3	LAST	194	04,2061	3 0775 1	ISITPOO	CA	MMNUMBER	
0663	REP	1			04,2062	0 0006 1	EXTEND			
0664	REP	1			04,2063	1 2112 0	BZF	ISSERVON	YES, CHECK SERVICER STATUS	
0665	REP	3	LAST	166	04,2064	4 0078 1	JS	FLAGWD2	NO, IS NODO V37 FLAG SET	
0666	REP	22	LAST	161	04,2065	7 4712 0	MASK	BIT1		
0667	REP	46	LAST	193	04,2066	10 000 0	CCS	A		
0668	REP	1			04,2067	1 2075 0	TCP	CHECKTAB	NO	
0669	REP	11	LAST	185	04,2070	0 5537 0	TC	ALARM		
0670	REP				04,2071	01520 1	OCT	1520		
0671	REP	1			04,2072	0 4473 0	V37RAD	TC	RELDSP	RELEASES DISPLAY FROM ASTRONAUT
0672	REP	4	LAST	190	04,2073	0 4574 0	TC	POSTJUMP	BRING BACK LAST NORMAL DISPLAY IF THERE	
0673	REP	1			04,2074	21176 1	CADR	PINBRNCH	WAS ONE. OY	
0674	REP	1			04,2075	3 2475 0	CHECKTAB	CA	NOV37MM	THE NO. OF MM
0675	REP	13	LAST	187	04,2076	54 155 1	AGAINMM	TS	MPAC +1	
0676	REP	14	LAST	194	04,2077	50 155 0	NDX	MPAC +1		
0677	REP	1			04,2100	3 2440 0	CA	PREMM1	OBTAIN WHICH MM THIS IS FOR	
0678	REP	1			04,2101	7 6043 1	MASK	LOW7		
0679	REP				04,2102	4 0000 0	COM			
0680	REP	4	LAST	194	04,2103	6 0775 1	AD	MMNUMBER		
0681	REP	47	LAST	194	04,2104	10 000 0	CCS	A		
0682	REP	15	LAST	194	04,2105	10 155 1	CCS	MPAC +1	IF GR, SEE IF ANYMORE IN LIST	



L FRESH START AND RESTART

USER'S PAGE NO. 19 E6 S3

0683	REF	1		04,2106	1 2078 0	TCP	AGAINMM	YES, GET NEXT ONE
0684	REF	1		04,2107	1 2257 1	TCP	V37NNO	LAST TIME OR PASSED MM
0685	REF	16	LAST 194	04,2110	3 0155 0	CA	MPAC +1	
0686	REF	1		04,2111	54 774 1	TS	MINDEX	SAVE INDEX FOR LATER
0687	REF	1		04,2112	4 0103 1	ISSERVON	CS	V37 FLAG SET - I.E. IS SERVICER GOING
0688	REF	22	LAST 193	04,2113	7 4705 0	MASK	FLAGWRD7	
0689	REF	48	LAST 194	04,2114	10 000 0	CCS	A	
0690	REF	1		04,2115	1 2123 1	TCP	CANV37	NO
0691				04,2116	0 0004 0	INHINT		
0692	REF	23	LAST 194	04,2117	4 4712 0	CS	BIT1	YES, TURN OFF AVERAGE G FLAG AND WAIT
0693	REF	1		04,2120	7 0075 1	MASK	FLAGWRD1	FOR SERVICER TO RETURN TO CANV37
0694	REF	2	LAST 195	04,2121	54 075 1	TS	FLAGWRD1	
0695	REF	1		04,2122	1 5112 1	TCP	ENDOFJOB	
0714	REF	1		04,2123	3 2377 0	CANV37	CAP	
0715	REF	1		04,2124	54 374 0	TS	ROAD	
							TEMPFLASH	
0716	REF	2	LAST 190	04,2125	0 5301 0	TC	PHASCHNG	
0717				04,2128	00014 1	OCT	14	
0716	REF	1		04,2127	0 6006 1	ROO	TC	INTPRET
0719				04,2130	77624 1	CALL		WAIT FOR INTEGRATION TO FINISH
0720	REF	1		04,2131	27371 1		INTSTALL	
0721				04,2132	77776 1	DUMMYAD	EXIT	
07211	REF	2	LAST 190	04,2133	0 2315 1	TC	INITSUB	
07212	REF	1		04,2134	0 5447 0	TC	DOWNFLAG	
07213	REF	1		04,2135	00020 0	ADRES	STIKFLAG	
072133	REF	3	LAST 194	04,2136	0 4555 0	TC	BANKCALL	
072134	REF	1		04,2137	57750 1	CADR	UPACTOFF	TURN OFF UPLINK ACTIV LIGHT
072135	REF	2	LAST 195	04,2140	0 5447 0	TC	DOWNFLAG	
072136	REF	1		04,2141	00215 1	ADRES	VHPRFLAG	
07214	REF	3	LAST 195	04,2142	0 5447 0	TC	DOWNFLAG	
07215	REF	1		04,2143	00037 0	ADRES	R21MARK	
0722	REF	5	LAST 194	04,2144	10 775 0	CCS	MMNUMBER	IS THIS A POCH REQUEST
0723	REF	1		04,2145	1 2245 1	TCP	NOUVEAU	NO, PICK UP NEW PROGRAM
0724	REF	2	LAST 190 TO 193	8	8*	COUNT	04/P00	
0725	REF	2	LAST 194	04,2148	0 4473 0	POCH	TC	RELDSP
								RELEASE DISPLAY SYSTEM

L FRESH START AND RESTART

07255	REP	1		04,2147	3 4754 0				
07256	REP	1		04,2150	55=056 1	CAP	PRIOS		
						TS	PHSPRT2		
0726				04,2151	0 0004 0				
						INHINT			
0727	REP	24	LAST	195	04,2152	4 4712 0	CS	BIT1	
0728	REP	4	LAST	194	04,2153	7 0076 1	MASK	FLAGWRD2	
0729	REP	5	LAST	196	04,2154	54 076 1	TS	FLAGWRD2	
0730	REP	3	LAST	194	04,2155	3 4715 0	CA	FIVE	
0731	REP	11	LAST	166	04,2156	54 001 1	TS	L	
0732					04,2157	4 0000 0	COM		
0733	REP	2	LAST	161	04,2160	52 755 1	DXCH	-PHASE2	
0734	REP	1			04,2161	4 2374 1	CS	BIT7-8	
0735	REP	1			04,2162	7 0074 0	MASK	FLAGWRD0	
0736	REP	2	LAST	196	04,2163	54 074 0	TS	FLAGWRD0	
0737	REP	1			04,2164	3 4714 1	CAP	DNLADP00	
0738	REP	2	LAST	193 TO 195	94 94*		COUNT	04/V37	
0739	REP	3	LAST	179	04,2165	54 332 1	SEUDOP00 TS	DNLST00D	
A0740									
0741	REP	1			04,2166	4 2375 0	CS	OCT01120	
0742	REP	2	LAST	160	04,2167	55=071 1	TS	ERANKTEM	
0743	REP	3	LAST	195	04,2170	7 0075 1	MASK	FLAGWRD1	
0744	REP	4	LAST	196	04,2171	54 075 1	TS	FLAGWRD1	
0751	REP	13	LAST	194	04,2172	0 4633 0	GROUPKIL TC	IBNKCALL	
0752	REP	1			04,2173	12506 1	CADR	V37KLEAN	
0753	REP	6	LAST	195	04,2174	10 775 0	CCS	MNUMBER	
0754	REP	1			04,2175	1 2204 1	TCP	RENDV00	
0755	REP	14	LAST	196	04,2176	0 4633 0	TC	IBNKCALL	
0756	REP	1			04,2177	12500 1	CADR	POCKLEAN	
0757	REP	7	LAST	196	04,2200	3 0775 1	GOMOD	CA	MNUMBER
0758	REP	3	LAST	165	04,2201	55=011 1	TS	MODREG	
0759	REP	5	LAST	194	04,2202	0 4574 0	GOGOPROG TC	POSTJUMP	
0760	REP	1			04,2203	12641 1	CADR	GOPROG2	
0761	REP	6	LAST	196	04,2204	4 0775 0	RENDV00	CS	MNUMBER
0762	REP	2	LAST	161	04,2205	6 4112 1	AD	OCT24	
0763					04,2206	0 0006 1	EXTEND		
0764	REP	1			04,2207	1 2211 0	BZP	RENDV00	
0765	REP	1			04,2210	1 2221 0	TCP	POOFIZZ	

USER=3 PAGE NO. 20 E6 S3
SET VARIABLE RESTART REGISTER FOR P00.

TURN OFF NODOPLAG

SET 2.5 RESTART FOR STATEINT1

RESET IMUSE + KILL P20 BY TURNING OFF
RENDPLG

SET UP APPROPRIATE DOWNLIST.

(OLD ONE WILL BE FINISHED FIRST)
TURN OFF TRACK, TARG1, UPDATE FLAGS

KILL GROUPS 3(S,6

IS IT POCH
NO

REDUNDANT EXCEPT FOR GROUP 4.

IS NEW PROG = 20
20

YES



L FRESH START AND RESTART

USER'S PAGE NO. 21 E6 S3

0786	REP	9	LAST	198	04,2211	4 0775 0	RENDNOO	CS	MMNUMBER
0787	REP	4	LAST	198	04,2212	6 1011 0		AD	MODREG
0788					04,2213	0 0008 1		EXTEND	
0789	REP	1			04,2214	1 2225 1		BZF	KILL20
0770	REP	3	LAST	198	04,2215	3 0074 1		CA	FLAGWRD0
0771	REP	20	LAST	185	04,2218	7 4704 1		MASK	BIT7
0772	REP	49	LAST	195	04,2217	10 000 0		CCS	A
0773	REP	1			04,2220	1 2238 0		TCF	STATQUO
0774	REP	21	LAST	197	04,2221	3 4704 0	POOFIZZ	CAP	BIT7
0775	REP	4	LAST	197	04,2222	7 0074 0		MASK	FLAGWRD0
0776	REP	50	LAST	197	04,2223	10 000 0		CCS	A
0777	REP	1			04,2224	1 2233 0		TCF	REV37
0778					04,2225	0 0008 1	KILL20	EXTEND	
0779	REP	9	LAST	181	04,2228	3 4714 1		DCA	NEG0
0780	REP	3	LAST	184	04,2227	52 753 1		DXCH	-PHASE1
0781					04,2230	0 0008 1		EXTEND	
0782	REP	10	LAST	197	04,2231	3 4714 1		DCA	NEG0
0783	REP	3	LAST	196	04,2232	52 755 1		DXCH	-PHASE2
0784	REP	1			04,2233	3 2378 1	REV37	CAP	V37OCAD
0785	REP	2	LAST	195	04,2234	54 374 0		TS	TRMPFLSH
0788	REP	1			04,2235	1 2202 1		TCF	GOGOPROG
0787	REP	5	LAST	198	04,2238	4 0075 1	STATQUO	CS	FLAGWRD1
0788	REP	1			04,2237	7 4732 1		MASK	OCT120
0789	REP	6	LAST	197	04,2240	28 075 1		ADS	FLAGWRD1
0790					04,2241	0 0008 1		EXTEND	
0791	REP	11	LAST	197	04,2242	3 4714 1		DCA	NEG0
0792	REP	2	LAST	181	04,2243	52 781 0		DXCH	-PHASE4
0793	REP	1			04,2244	1 2200 0		TCF	GOMOD
0794	REP	22	LAST	197	04,2245	3 4704 0	NOUVEAU	CAP	BIT7
0795	REP	5	LAST	197	04,2248	7 0074 0		MASK	FLAGWRD0
0796	REP	51	LAST	197	04,2247	10 000 0		CCS	A
0797					04,2250	1 2253 0		TCF	+3
0798	REP	4	LAST	195	04,2251	0 5447 0		TC	DOWNFLAG
0799	REP	1			04,2252	00007 0		ADRES	IMUSE
0800	REP	2	LAST	195	04,2253	50 774 0	+3	INDEX	MINDEX
0801	REP	1			04,2254	3 2478 0		CAP	DNLADM1
0802					04,2255	0 0004 0		INHINT	
0803	REP	1			04,2258	1 2165 0		TCF	SEUDOPOO
0804	REP	1			04,2257	0 4400 1	V37NCNO	TC	FALTON

IS RENDEZVOO FLAG SET

NO, KILL GROUPS 1 + 2

SET RESTART POINT

SET TRACK FLAG AND UPDATE FLAG

KILL GROUP 4

NO, RESET IMUSE FLAG.
BIT 8 FLAG 0

OBTAIN NEW DOWNLIST ADDRESS

COME HERE IF MM REQUESTED DOESNT EXIST



L FRESH START AND RESTART

USER'S PAGE NO. 22 E6 S3

0805	REF	1		04,2260	1 2072 1	TCF	V37BAD	
0809	REF	16	LAST	183	4707	OCT00010	EQUALS BIT4	
0810						V37XEQ	INHINT	
0811	REF	3	LAST	197	04,2281 0 0004 0	INDEX	MINDEX	
0812	REF	2	LAST	194	04,2282 50 774 0	CAP	PREMM1	
0813	REF	1			04,2283 3 2440 0	TS	MMTEMP	
0814	REF	1			04,2284 55*080 1	TS	CYR	OBTAIN PRIORITY BITS 15 - 11 SHIFT RIGHT TO BITS 14 - 10
					04,2285 54 020 1			
0815	REF	2	LAST	198	04,2286 3 0020 0	CA	CYR	
0818	REF	1			04,2287 7 7874 1	MASK	PRIO37	
0817	REF	1			04,2270 55*082 0	TS	PHSPROT4	PRESET GROUP4 RESTART PRIORITY STORE PRIO FOR SPVAC
0818	REF	1			04,2271 54 083 0	TS	NEWPRIO	
0819	REF	2	LAST	198	04,2272 3 1080 0	CA	MMTEMP	OBTAIN EBANK - BITS 8, 9, 10 OF MMTEMP.
0820					04,2273 0 0008 1	EXTEND		
0821	REF	17	LAST	181	04,2274 7 4703 0	MP	BIT8	
0822	REF	1			04,2275 7 4718 1	MASK	LOW3	
0823	REF	12	LAST	198	04,2276 54 001 1	TS	L	
0824	REF	4	LAST	198	04,2277 50 774 0	INDEX	MINDEX	
0825	REF	1			04,2300 3 2403 1	CAP	FCADRMM1	
0826	REF	1			04,2301 55*081 0	TS	RASETEMP	
0827	REF	3	LAST	182	04,2302 7 4384 0	MASK	H15	
0828	REF	13	LAST	198	04,2303 26 001 1	ADS	L	
0829	REF	2	LAST	198	04,2304 3 1081 1	CA	BASETEMP	OBTAIN GENADR PORTION OF 2CADR.
0830	REF	2	LAST	32	04,2305 7 4747 0	MASK	LOW10	
0831	REF	12	LAST	139	04,2308 6 4700 1	AD	BIT11	
0832	REF	1			04,2307 0 5053 1	TC	SPVAC	
0833	REF	3	LAST	198	04,2310 3 1080 0	CA	MMTEMP	UPON RETURN FROM FINDVAC PLACE THE NEW MM IN MODREG (THE LOW 7 BITS OF PHSBROT1)
0834	REF	2	LAST	194	04,2311 7 8043 1	MASK	LOW7	
0835	REF	1			04,2312 0 5246 1	TC	NEWMODEA	
R0838.	FOR SUNDISK ONLY							
0837	REF	3	LAST	195	04,2313 0 4473 0	TC	RELDSP	RELEASE DISPLAY
0838	REF	2	LAST	195	04,2314 0 5112 0	TC	ENDOFJOB	AND EXIT
0839					04,2315 0 0008 1	INITSUB	EXTEND	
0840	REF	17	LAST	195	04,2318 22 155 0	QXCH	MPAC +1	
0841	REF	3	LAST	193	04,2317 3 4752 0	CAP	EBANK6	SET E6 FOR DEADBRAND CODING WILL BE RESET IN STARTSB2.
0842	REF	6	LAST	194	04,2320 54 003 0	TS	EBANK	
0843					04,2321 0 0004 0	INHINT		
08435	REF	4	LAST	195	04,2322 0 4555 0	TC	BANKCALL	
08436	REF	2	LAST	184	04,2323 45245 0	CADR	STOPRATE	
0844	REF	1			04,2324 3 0105 0	CA	FLAGWRD9	RESTORE DEADBRAND
0845	REF	10	LAST	187	04,2325 7 4677 1	MASK	BIT12	



L FRESH START AND RESTART

USER=3 PAGE NO. 23 E6 S3

0846	REF	52	LAST	197	04,2328	10 000 0	CCS	A
0847	REF	1			04,2327	1 2333 1	TCF	SETMAXER
0848	REF	5	LAST	198	04,2330	0 4555 0	TC	BANKCALL
0849	REF	1			04,2331	50213 1	CADR	SETMINDB
0850	REF	1			04,2332	1 2335 1	TCF	RAKE
0851	REF	6	LAST	199	04,2333	0 4555 0	SETMAXER	TC
0852	REF	1			04,2334	50227 0	CADR	SETMAXDB
0853	REF	2	LAST	181	04,2335	3 4717 1	RAKE	CAP
0854	REF	18	LAST	198	04,2336	54 154 0	+1	TS
0855	REF	19	LAST	199	04,2337	50 154 1		INDEX
0856	REF	1			04,2340	4 2358 1		CS
0857	REF	20	LAST	199	04,2341	50 154 1		INDEX
0858	REF	6	LAST	197	04,2342	7 0074 0		MASK
0859	REF	21	LAST	199	04,2343	50 154 1		INDEX
0860	REF	7	LAST	199	04,2344	54 074 0		TS
0861	REF	22	LAST	199	04,2345	10 154 0		CCS
0862	REF	2	LAST	199	04,2346	1 2338 1		TCF
0863					04,2347	0 0003 1		RELINT
0864	REF	1			04,2350	0 5435 0	TC	UPFLAG
0865	REF	1			04,2351	00044 1	ADRES	IMPULSW
0868	REF	1			04,2352	0 5425 1	TC	CLEARMRK
08684	REF	5	LAST	188	04,2353	3 7716 0	CA	NEGONE
08686	REF	16	LAST	180	04,2354	55-303 1	TS	OPTIND
0869	REF	23	LAST	199	04,2355	0 0155 0	TC	MPAC +1
0870					04,2356	00000 1	FLAGTABL	OCT
0871					04,2357	00040 0		OCT
0872					04,2360	02000 0		OCT
0873					04,2361	00000 1		OCT
0874					04,2362	00000 1		OCT
0875					04,2363	04140 0		OCT
0876					04,2364	10000 0		OCT
0877					04,2365	16020 1		OCT
0878					04,2366	00000 1		OCT
0879					04,2367	42000 1		OCT
0880					04,2370	00000 1		OCT
0881					04,2371	00000 1		OCT
0882	REF	1			5630		NEG7	EQUALS
0883	REF	2	LAST	167	E6,1425			OCT77770
0884	REF	2	LAST	168	04,2372	03143 1	EBANK=	PACTOFF
0884					04,2373	12068 1	POODAPAD	2CADR
0885	REF	1			1060			TS IDLOC
0886	REF	1			1061		MMTEMP	EQUALS
0887					04,2374	00300 1	BASETEMP	EQUALS
							BIT7-8	PHSPRDT3
								TRASE4
								OCT
								300

MAX DB SELECTED
MIN DB SELECTEDTHIS PART CLEARS FLAGWORD BITS.
LOOP COMES HERE.

PUT REVISED FLAGWORD BACK.

GET THE NEXT FLAGWORD.

NOW SET IMPULSW

RETURN FROM INITSUB

IDLEFAIL
STEERSWV59FLAG, ENGONFLG, 3AXISFLG
STRULLSW
IGNFLAG, ASINFLAG, TIMRFLAG, NOUPFLAG
SWTOVER, V94FLAG



L FRESH START AND RESTART

USER=S PAGE NO. 24 E6 S3

0688 04,2375 01120 0 OCT01120 OCT 01120

0689 REF 1 04,2376 10264 0 V37QCAD CADR V37XEQ +3

0890 REF 1 04,2377 10132 0 ROOAD CADR DUMMYAD

0891 REF 4 LAST 194 E6,1486 EBANK= DAPDATR1

0892 REF 1 04,2400 02108 1 RCSADDR4 2CADR RCSATT

0692 REF 1 04,2401 42068 1

0693 04,2402 37312 0 3.1SEC OCT 37312 2.5 + 0.6 SEC

R0894 FOR VERB 37 TWO TABLES ARE MAINTAINED. EACH TABLE HAS AN ENTRY FOR EACH

R0895 MAJOR MODE THAT CAN BE STARTED FROM THE KEYBOARD. THE ENTRIES ARE PUT

R0896 INTO THE TABLE WITH THE ENTRY FOR THE HIGHEST MAJOR MODE COMING FIRST,

R0897 TO THE LOWEST MAJOR MODE WHICH IS THE LAST ENTRY IN EACH TABLE.

R0898 THE PCADRM TABLE CONTAINS THE PCADR OF THE STARTING JOB OF

R0899 THE MAJOR MODE. FOR EXAMPLE,

A0900 PCADRM1 PCADR P79 START OF P 79

A0901 PCADR PROG18 START OF P 16

A0902 PCADR P01 START OF P 01

0903 04,2403 PCADRM1 EQUALS

0904 REF 1 04,2403 11334 0 PCADR P79

0905 REF 1 04,2404 11106 0 PCADR P78

0908 REF 1 04,2405 73433 1 PCADR P77

09085 REF 1 04,2408 26038 0 PCADR P76

0907 REF 1 04,2407 72157 1 PCADR P75

0906 REF 1 04,2410 72002 0 PCADR P74

0909 REF 1 04,2411 54320 1 PCADR P62

0910 REF 1 04,2412 54217 1 PCADR P61

0911 REF 1 04,2413 32000 0 PCADR P54

0912 REF 1 04,2414 31054 1 PCADR P53

0913 REF 1 04,2415 32000 0 PCADR PROG52

0914 REF 1 04,2416 31054 1 PCADR P51

0915 REF 1 04,2417 50410 1 PCADR P47CSM

0916 REF 1 04,2420 50235 0 PCADR P41CSM

0917 REF 1 04,2421 50002 0 PCADR P40CSM

0918 REF 1 04,2422 11327 1 PCADR P39

0919 REF 1 04,2423 11103 0 PCADR P36

0920 REF 1 04,2424 74502 0 PCADR P37

0921 REF 1 04,2425 72153 0 PCADR P35

0922 REF 1 04,2428 72000 1 PCADR P34

0923 REF 1 04,2427 73820 1 PCADR P31

0924 REF 1 04,2430 73804 1 PCADR P30

0925 REF 1 04,2431 82021 0 PCADR P23

0926 REF 1 04,2432 60000 1 PCADR PROG22

0927 REF 1 04,2433 76001 1 PCADR PROG21

0928 REF 1 04,2434 78207 0 PCADR PROG20

0929 REF 1 04,2435 73431 0 PCADR P17

0930 REF 1 04,2436 55655 1 PCADR P06

L FRESH START AND RESTART

USER'S PAGE NO. 25 E6 S3

0931 REP 1 04,2437 86001 0 PCADR GTSCPS81
R0932 THE PREMM TABLE CONTAINS THE E-BANK, MAJOR MODE, AND PRIORITY
R0933 INFORMATION, IT IS IN THE FOLLOWING FORM,

GYROCOMPASS STANDARD LEAD IN.

R0934 PPP PPE EEM MM MM

R0935 WHERE THE 7 M BITS CONTAIN THE MAJOR MODE NUMBER
R0936 3 E BITS CONTAIN THE E-BANK NUMBER
R0937 5 P BITS CONTAIN THE PRIORITY AT WHICH THE JOB IS
R0938 TO BE STARTED

R0939 FOR EXAMPLE,

A0940	PREMM1	OCT	87213	PRIORITY	33
A0941				E-BANK	5
A0942				MAJOR MODE	11
A0943		OCT	25437	PRIORITY	12
A0944				E-BANK	6
A0945				MAJOR MODE	31

	04,2440	PREMM1	EQUALS				
0946	04,2440		OCT	27117	MM 79	EBANK 4	PRI0 13
0947	04,2440	27117 0	OCT	27118	MM 76	EBANK 4	PR23 13
0948	04,2441	27116 1	OCT	27115	MM 77	EBANK 4	PRI0 13
0949	04,2442	27115 1	OCT	27114	MM 76	EBANK 7	PRI0 13
09495	04,2443	27714 0	OCT	27113	MM 75	EBANK 4	PRI0 13
0950	04,2444	27113 1	OCT	27112	MM 74	EBANK 4	PRI013
0951	04,2445	27112 0	OCT	27476	MM 62	EBANK 6	PRI0 13
0952	04,2446	27476 1	OCT	27475	MM 61	EBANK 6	PRI0 13
0953	04,2447	27475 1	OCT	27266	MM 54	EBANK 5	PRI0 13
0954	04,2450	27266 0	OCT	27265	MM 53	EBANK 5	PRI0 13
0955	04,2451	27265 0	OCT	27264	MM 52	EBANK 5	PRI0 13
0956	04,2452	27264 1	OCT	27263	MM 51	EBANK 5	PRI0 13
0957	04,2453	27263 0	OCT	27857	MM 47	EBANK 7	PRI0 13
0958	04,2454	27857 0	OCT	27451	MM 41	EBANK 8	PRI0 13
0959	04,2455	27451 1	OCT	27450	MM 40	EBANK 6	PRI0 13
0960	04,2456	27450 0	OCT	27047	MM 39	EBANK 4	PRI013
0961	04,2457	27047 1	OCT	27046	MM 36	EBANK 4	PRI0 13
0962	04,2460	27046 0	OCT	27645	MM 37	EBANK 7	PRI013
0963	04,2461	27645 0	OCT	27043	MM 35	EBANK 4	PRI0 13
0964	04,2462	27043 0	OCT	27042	MM 34	EBANK 4	PRI013
0965	04,2463	27042 1	OCT	27637	MM 31	EBANK 7	PRI0 13
0966	04,2464	27637 0	OCT	27636	MM 30	EBANK 7	PRI0 13
0967	04,2465	27636 1	OCT	27227	MM 23	EBANK 5	PRI0 13
0968	04,2466	27227 0	OCT	27226	MM 22	EBANK 5	PRI0 13
0969	04,2467	27226 1	OCT	27025	MM 21	EBANK 4	PRI0 13
0970	04,2470	27025 0	OCT	27424	MM 20	EBANK 6	PRI0 13
0971	04,2471	27424 0	OCT	27021	MM 17	EBANK 4	PRI0 13
0972	04,2472	27021 1	OCT				



L FRESH START AND RESTART

USBR=8 PAGE NO. 26 E6 S3

0973 04,2473 27006 1 OCT 27006 MM 06 EBANK 4 PRIO 13
0974 04,2474 41201 1 OCT 41201 MM 01 EBANK 5 PRIO 20
R0975
R0976

THE FOLLOWING LIST IS FOR THE PURPOSE OF VERIFYING THAT THE EBA

0977	REF	6	LAST	171	E7,1412	EBANK= TIG	EBANK SETTING REQUIRED BY MM 76
0978	REF	4	LAST	90	E4,1763	EBANK= KT	EBANK SETTING REQUIRED BY MM 75
0979	REF	2	LAST	90	E4,1770	EBANK= SUBEXIT	EBANK SETTING REQUIRED BY MM 74
0980	REF	2	LAST	109	E6,1861	EBANK= AOG	EBANK SETTING REQUIRED BY MM 62
0981	REF	3	LAST	202	E6,1861	EBANK= AOG	EBANK SETTING REQUIRED BY MM 61
0982	REF	3	LAST	169	0302	EBANK= BESTI	EBANK SETTING REQUIRED BY MM 54
0983	REF	1			0304	EBANK= STARIND	EBANK SETTING REQUIRED BY MM 53
0984	REF	4	LAST	202	0302	EBANK= BESTI	EBANK SETTING REQUIRED BY MM 52
0985	REF	2	LAST	202	0304	EBANK= STARIND	EBANK SETTING REQUIRED BY MM 51
0986	REF	4	LAST	122	E7,1672	EBANK= P40TMP	EBANK SETTING REQUIRED BY MM 47
0987	REF	2	LAST	121	E7,1477	EBANK= AXISCODE	EBANK SETTING REQUIRED BY MM 41
0988	REF	2	LAST	106	E6,1510	EBANK= KMPAC	EBANK SETTING REQUIRED BY MM 40
0989	REF	5	LAST	202	E4,1763	EBANK= KT	EBANK SETTING REQUIRED BY MM 35
0990	REF	3	LAST	202	E4,1770	EBANK= SUBEXIT	EBANK SETTING REQUIRED BY MM 34
0991	REF	2	LAST	120	E7,1625	EBANK= +MGA	EBANK SETTING REQUIRED BY MM 30
0992	REF	3	LAST	175	E5,1751	EBANK= LANDMARK	EBANK SETTING REQUIRED BY MM 23
0993	REF	2	LAST	70	0301	EBANK= MARKINDX	EBANK SETTING REQUIRED BY MM 22
0994	REF	2	LAST	126	E7,1777	EBANK= WHOCARES	EBANK SETTING REQUIRED BY MM 21
0995	REF	1			E6,1412	EBANK= ESTROKER	EBANK SETTING REQUIRED BY MM 20
0996	REF	2	LAST	77	1150	EBANK= TIME2SAV	EBANK SETTING REQUIRED BY MM 08
0997	REF	1			E5,1425	EBANK= OPLACE	EBANK SETTING REQUIRED BY MM 01

R0998 NOTE, THE FOLLOWING CONSTANT IS THE NUMBER OF ENTRIES IN EACH OF
R0999 ---- THE ABOVE LISTS-1 (IE, THE NUMBER OF MAJOR MODES (EXCEPT P00)
R1000 THAT CAN BE CALLED FROM THE KEYBOARD MINUS ONE)

1001					04,2475	EPREMM1	EQUALS
1002	REF	3	LAST	196	04,2440	SETLOC	PREMM1
1003	REF	1			0035	NO.MMS	=MINUS EPREMM1
1004	REF	3	LAST	193	04,2000	SETLOC	VERB37
1005					04,2475	BANK	
1006	REF	1			04,2475	NOV37MM	ADRES NO.MMS -1
1007					04,2476	DNLADM1	EQUALS
1008	REF	1			04,2476	ADRES	RENDEZVU
1009	REF	2	LAST	202	04,2477	ADRES	RENDEZVU
1010	REF	3	LAST	202	04,2500	ADRES	RENDEZVU
10105	REF	4	LAST	202	04,2501	ADRES	RENDEZVU
1011	REF	5	LAST	202	04,2502	ADRES	RENDEZVU
1012	REF	6	LAST	202	04,2503	ADRES	RENDEZVU

END OF PREMM1 TABLE

THIS CODING WILL AUTOMATICALLY CHANGE
THE «NOV37MM» CONSTANT AS ENTRIES ARE
INSERTED (IN) OR DELETED (FROM) THE
«PREMM1» TABLE.

ITEMS IN «PREMM1» TABLE - 1. *DON'T MOVE*

P79

P76

P77

P76

P75

P74

L FRESH START AND RESTART

USER'S PAGE NO. 27 E5 S3

1013	REF	1		04,2504	00001 0	ADRES	ENTRYUPD	P62
1014	REF	1		04,2505	00003 1	ADRES	POWERED	P61
1015	REF	1		04,2506	00000 1	ADRES	COSTALIN	
1016	REF	2	LAST 203	04,2507	00000 1	ADRES	COSTALIN	
1017	REF	3	LAST 203	04,2510	00000 1	ADRES	COSTALIN	P52
1018	REF	4	LAST 203	04,2511	00000 1	ADRES	COSTALIN	P51
1019	REF	2	LAST 203	04,2512	00003 1	ADRES	POWERED	P47
1020	REF	3	LAST 203	04,2513	00003 1	ADRES	POWERED	P41
1021	REF	4	LAST 203	04,2514	00003 1	ADRES	POWERED	P40
1022	REF	7	LAST 202	04,2515	00002 0	ADRES	RENDEZVU	P39
1023	REF	8	LAST 203	04,2518	00002 0	ADRES	RENDEZVU	P38
1024	REF	9	LAST 203	04,2517	00002 0	ADRES	RENDEZVU	P37
1025	REF	10	LAST 203	04,2520	00002 0	ADRES	RENDEZVU	P35
1026	REF	11	LAST 203	04,2521	00002 0	ADRES	RENDEZVU	P34
1027	REF	12	LAST 203	04,2522	00002 0	ADRES	RENDEZVU	
1028	REF	13	LAST 203	04,2523	00002 0	ADRES	RENDEZVU	P30
1029	REF	14	LAST 203	04,2524	00002 0	ADRES	RENDEZVU	P23
1030	REF	1		04,2525	00004 0	ADRES	P22DNLST	P22
1031	REF	15	LAST 203	04,2526	00002 0	ADRES	RENDEZVU	P21
1032	REF	16	LAST 203	04,2527	00002 0	ADRES	RENDEZVU	P20
1033	REF	17	LAST 203	04,2530	00002 0	ADRES	RENDEZVU	P17
1034	REF	5	LAST 203	04,2531	00000 1	ADRES	COSTALIN	P08
1035	REF	6	LAST 203	04,2532	00000 1	ADRES	COSTALIN	P01
1038	REF	17	LAST 194	4714		DNLADP00 =	ZERO	
1037				0000		COSTALIN =	0	
1038				0001		ENTRYUPD =	1	
1039				0002		RENDEZVU =	2	
1040				0003		POWERED =	3	

P22DNLST = 4

R1042 ORBITAL INTEGRATION CONSTANTS

R1043 THESE CONSTANTS ARE USED IN COMPUTING THE SETTING OF MIDFLAG.

1044				04,2533	00485 0	R/M	2DEC	2538.09 E3 B-27	800 KM ABOVE LUNAR SURFACE
1044				04,2534	32324 0				
1045				04,2535	00333 1	R/M	2DEC	7178165 B-29	800 KM ABOVE EQ. RADIUS
1045				04,2536	01733 1				
1046				13,2000		BANK	13		
1047	REF	1		13,2000		SETLOC	INTINIT		
1048				13,2000		BANK			
1049	REF	1				COUNT*	SS/INTIN		
1050	REF	2	LAST 84	E3,1554		EBANK=	RECTCSM		
1051				13,2000	43014 0	STATEUP	SET	BOF	EXTRAPOLATE CM STATE VECTOR
1052	REF	1		13,2001	01474 1			VINTFLAG	
1053	REF	1		13,2002	01751 0			ORPWFLAG	ALSO 6X6 W-MATRIX IF VALID
1054				13,2003	26006 0			+3	FOR ORBITAL NAVIGATION
1055				13,2004	77614 1	SET			



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1966 KOOLADE .069 PAGE 204

L FRESH START AND RESTART

USER=5 PAGE NO. 28 E3 S3

1056	REF	1		13,2005	01476 0				
1057				13,2006	45014 0	CLEAR	DIM0FLAG		
1058	REF	1		13,2007	01667 1		CALL		
1059	REF	1		13,2010	27113 1		PRECIFLG		
1060				13,2011	71214 0	BON	INTEGRV		
1061	REF	1		13,2012	04307 1		DLOAD		
1062	REF	1		13,2013	26031 1		SURPFLAG		
1063	REF	2	LAST 64	13,2014	01571 0		STATEND		
1064	REF	1		13,2015	34041 0		TETCSM		
1065	REF	2	LAST 195	13,2016	27371 1	STCALL	TDEC1		
1066				13,2017	45014 0		INTSTALL		
1067	REF	2	LAST 203	13,2020	01674 0	CLEAR	CALL		
1068	REF	1		13,2021	26621 0		VINTFLAG		
1069				13,2022	43014 0		SETIFLGS		
1070	REF	1		13,2023	02756 1	BOF	SET		
1071				13,2024	26026 1		RENDWFLG		
1072	REF	2	LAST 204	13,2025	01476 0		+2		
1073				13,2026	45014 0		DIM0FLAG		
1074	REF	2	LAST 204	13,2027	01467 0	SET	CALL		
1075	REF	2	LAST 204	13,2030	27113 1		PRECIFLG		
1076				13,2031	77614 1	STATEND	CLRGO		
1077	REF	1		13,2032	01236 1		INTEGRV		
1078	REF	1		13,2033	26607 1		NOD0FLAG		
R1079	THISVINT IS CALLED BY MIDTOAV1 AND2						ENDINT		
1080				13,2034	43414 1	THISVINT SET	RVO		
1081	REF	3	LAST 204	13,2035	01474 1		VINTFLAG		

EXTRAPOLATE LM STATE VECTOR

AND 6X6 W-MATRIX IF VALID

FOR RENDEZVOUS NAVIGATION



L RESTART TABLES

USER'S PAGE NO. 1 E0 S3

P0001 RESTART TABLES

R0002 -----

R0003 THERE ARE TWO FORMS OF RESTART TABLES FOR EACH GROUP. THEY ARE KNOWN AS THE EVEN RESTART TABLES AND THE ODD
R0005 RESTART TABLES. THE ODD TABLES HAVE ONLY ONE ENTRY OF THREE LOCATIONS WHILE THE EVEN TABLES HAVE TWO ENTRIES
R0007 EACH USING THREE LOCATIONS. THE INFORMATION AS TO WHETHER IT IS A JOB, WAITLIST, OR A LONGCALL IS GIVEN BY THE
R0009 WAY THINGS ARE PUT INTO THE TABLES.

R0010 A JOB HAS ITS PRIORITY STORED IN PRODTAB OF THE CORRECT PHASE SPOT - A POSITIVE PRIORITY INDICATES A
R0012 FINDVAC JOB, A NEGATIVE PRIORITY A NOVAC. THE 2CADR OF THE JOB IS STORED IN THE CADRTAB.
R0014 FOR EXAMPLE,

A0015 5.7SPOT OCT 23000
A0016 2CADR SOMEJOB

R0017 A RESTART OF GROUP 5 WITH PHASE SEVEN WOULD THEN CAUSE SOMEJOB TO BE RESTARTED AS A FINDVAC WITH PRIORITY 23.

R0019 5.5SPOT OCT -23000
A0020 2CADR ANYJOB

R0021 HERE A RESTART OF GROUP 5 WITH PHASE 7 WOULD CAUSE ANYJOB TO BE RESTARTED AS A NOVAC WITH PRIORITY 23.
R0023 A LONGCALL HAS ITS GENADR OF ITS 2CADR STORED NEGATIVELY AND ITS BBCN STORED POSITIVELY. IN ITS PRODTAB IS
R0025 PLACED THE LOCATION OF A DP REGISTER THAT CONTAINS THE DELTA TIME THAT LONGCALL HAD BEEN ORIGINALLY STARTED
R0027 WITH. EXAMPLE,

A0028 3.6SPOT GENADR DELTAT
A0029 -GENADR LONGTASK
A0030 BBCN LONGTASK

A0031 OCT 31000
A0032 2CADR JOBGAIN

R0033 THIS WOULD START UP LONGTASK AT THE APPROPRIATE TIME, OR IMMEDIATELY IF THE TIME HAD ALREADY PASSED. IT SHOULD
R0035 BE NOTED THAT IF DELTAT IS IN A SWITCHED E BANK, THIS INFORMATION SHOULD BE IN THE BBCN OF THE 2CADR OF THE
R0037 TASK. FROM ABOVE, WE SEE THAT THE SECOND PART OF THIS PHASE WOULD BE STARTED AS A JOB WITH A PRIORITY OF 31.

R0039 WAITLIST CALLS ARE IDENTIFIED BY THE FACT THAT THEIR 2CADR IS STORED NEGATIVELY. IF PRODTAB OF THE PHASE SPOT
R0041 IS POSITIVE, THEN IT CONTAINS THE DELTA TIME, IF PRODTAB IS NEGATIVE THEN IT IS THE -GENADR OF AN ERASABLE
R0043 LOCATION CONTAINING THE DELTA TIME, THAT IS, THE TIME IS STORED INDIRECTLY. IT SHOULD BE NOTED AS ABOVE, THAT
R0045 IF THE TIME IS STORED INDIRECTLY, THE BBCN MUST CONTAIN THE NECESSARY E BANK INFORMATION IF APPLICABLE. WITH
R0047 WAITLIST WE HAVE ONE FURTHER OPTION, IF -0 IS STORED IN PRODTAB, IT WILL CAUSE AN IMMEDIATE RESTART OF THE
R0049 TASK. EXAMPLES,

A0050	OCT 77777	THIS WILL CAUSE AN IMMEDIATE RESTART
A0051	-2CADR ATASK	OF THE TASK 'ATASK'
A0052	DEC 200	IF THE TIME OF THE 2 SECONDS SINCE DUMMY
A0053	-2CADR DUMMY	WAS PUT ON WAITLIST IS UP, IT WILL BEGIN
A0054		IN 10 MS, OTHERWISE IT WILL BEGIN WHEN
A0055		IT NORMALLY WOULD HAVE BEGIN.



L RESTART TABLES

USER'S PAGE NO. 2 E0 S3

A0056
A0057-GENADR DTIME
-2CADR TASKTASKWHERE DTIME CONTAINS THE DELTA TIME
OTHERWISE THIS IS AS ABOVE

R0056 ***** NOW THE TABLES THEMSELVES *****

0059			01,2000	BANK 01
0060	REF	1	01,2000	SETLOC RESTART
0061			01,2000	BANK

0062	REF	1		COUNT 01/RSTAB
------	-----	---	--	----------------

0063			01,2000	PROTTAB EQUALS 12000
0064			01,2001	CADRTAB EQUALS 12001

USED TO FIND THE PRIORITY OR DELTATIME
THIS AND THE NEXT RELATIVE LOC CONTAIN
RESTART 2CADR

0066	REF	1	01,2000	0 0063 1	SIZE TAB	TC	1.2SPOT	-12006
0067	REF	1	01,2001	0 0010 0		TC	1.3SPOT	-12004
0068	REF	1	01,2002	0 0063 1		TC	2.2SPOT	-12006
0069	REF	1	01,2003	0 0024 1		TC	2.3SPOT	-12004
0070	REF	1	01,2004	0 0063 1		TC	3.2SPOT	-12006
0071	REF	1	01,2005	0 0043 0		TC	3.3SPOT	-12004
0072	REF	1	01,2006	0 0063 1		TC	4.2SPOT	-12006
0073	REF	1	01,2007	0 0107 1		TC	4.3SPOT	-12004
0074	REF	1	01,2010	0 0242 0		TC	5.2SPOT	-12006
0075	REF	1	01,2011	0 0260 0		TC	5.3SPOT	-12004
0076	REF	1	01,2012	0 0336 1		TC	6.2SPOT	-12006
0077	REF	1	01,2013	0 0346 0		TC	6.3SPOT	-12004
0078	REF	2	LAST 206	01,2071		1.2SPOT	EQUALS 3.2SPOT	

R0079 ANY MORE GROUP 1.EVEN RESTART VALUES SHOULD GO HERE

0080			01,2014	00170 1	1.3SPOT	DEC	120	
0081	REF	4	LAST 202	E6,1661		EBANK= AGC		
0082	REF	1		01,2015	74550 1	-2CADR	SETJTAG	
0083	REF	1		01,2016	45711 1			
0084	REF	5	LAST 200	01,2017	10000 0	1.5SPOT	OCT	10000
0085	REF	1		E6,1466		EBANK= DAPDATR1		
0086	REF	1		01,2020	02362 1	2CADR	REDQ40.9	
0087	REF	1		01,2021	34066 0			
0088	REF	2	LAST 202	01,2022	10000 0	1.7SPOT	OCT	10000
0089	REF	1		E6,1412		EBANK= ESTROKER		
0090	REF	1		01,2023	02074 0	2CADR	RELINUS	
0091	REF	1		01,2024	56066 1			
0092	REF	3	LAST 206	01,2025	10000 0	1.11SPOT	OCT	10000
0093	REF	1		E6,1412		EBANK= ESTROKER		
0094	REF	1		01,2026	02273 0	2CADR	PIKUP20	
0095	REF	1		01,2027	76066 0			

R0092 ANY MORE GROUP 1.ODD RESTART VALUES SHOULD GO HERE

0093	REF	2	LAST 206	01,2071		2.2SPOT	EQUALS 1.2SPOT	
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R0094 ANY MORE GROUP 2.EVEN RESTART VALUES SHOULD GO HERE

THIS NUMBER MUST EQUAL C(JTAGTIME)



L RESTART TABLES

USER'S PAGE NO. 3 E0 S3

0095	REP	1		01,2030	02805 0	2.3SPOT	GENADR 600SECS
0096	REP	1		01,2031	75216 0		-GENADR STATEINT
0097	REP	3	LAST 203	E3,1554			EBANK= RECTCSM
0098	REP	2	LAST 207	01,2032	28083 0		BBCON STATEINT
0099				01,2033	05000 1	2.5SPOT	OCT 05000
0100	REP	4	LAST 207	E3,1554			EBANK= RECTCSM
0101	REP	1		01,2034	02570 1		2CADR STATINT1
0101	REP	1		01,2035	28083 0		
0102				01,2036	10000 0	2.7SPOT	OCT 10000
0103	REP	3	LAST 124	E7,1734			EBANK= MRKBUF2
0104	REP	1		01,2037	02512 0		2CADR R22
0104	REP	1		01,2040	70087 1		
0105				01,2041	14000 1	2.11SPOT	OCT 14000
0106	REP	4	LAST 202	E5,1751			EBANK= LANDMARK
0107	REP	1		01,2042	02173 0		2CADR V94ENTER
0107	REP	1		01,2043	62085 0		
0108				01,2044	10000 0	2.13SPOT	OCT 10000
0109	REP	4	LAST 207	E7,1734			EBANK= MRKBUF2
0110	REP	1		01,2045	02377 0		2CADR REDOR22
0110	REP	1		01,2046	58087 0		
0111	ANY MORE GROUP 2.000 RESTART VALUES SHOULD GO HERE						
0112	REP	2	LAST 206	01,2071		3.2SPOT	EQUALS 4.2SPOT
0113	ANY MORE GROUP 3.EVEN RESTART VALUES SHOULD GO HERE						
0114				01,2047	20000 0	3.3SPOT	OCT 20000
0115	REP	3	LAST 167	E7,1427			EBANK= TGO
0116	REP	1		01,2050	02404 0		2CADR S40.13
0116	REP	1		01,2051	34087 1		
0117				01,2052	00000 1	3.5SPOT	DEC 0
0118				01,2053	00000 1		DEC 0
0119				01,2054	00000 1		DEC 0
0120				01,2055	22000 1	3.7SPOT	OCT 22000
0121	REP	2	LAST 85	E3,1706			EBANK= TEPHEM
0122	REP	1		01,2056	02127 1		2CADR MATRXJOB
0122	REP	1		01,2057	70063 0		
0123				01,2060	22000 1	3.11SPOT	OCT 22000
0124	REP	3	LAST 207	E3,1706			EBANK= TEPHEM
0125	REP	1		01,2061	02247 1		2CADR REP11
0125	REP	1		01,2062	70083 0		
0126				01,2063	22000 1	3.13SPOT	OCT 22000
0127	REP	4	LAST 207	E3,1706			EBANK= TEPHEM
0128	REP	1		01,2064	02026 1		2CADR REP11A
0128	REP	1		01,2065	70083 0		
0129	REP	4	LAST 207	01,2066	76347 0	3.15SPOT	-GENADR TGO +1
0130	REP	5	LAST 207	E7,1427			EBANK= TGO
0131	REP	1		01,2067	75071 0		-2CADR ENGINEOFF
0131	REP	1		01,2070	27710 1		



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1968 KOOLADE .069 PAGE 208

L RESTART TABLES

USER'S PAGE NO. 4 E0 93

R0132 ANY MORE GROUP 3.OOD RESTART VALUES SHOULD GO HERE

0133				01,2071	77777 0	4.2SPOT	OCT	77777
0134	REF	7	LAST	202	E7,1412		EBANK=	TIG
0135	REF	1			01,2072	75262 0	-2CADR	PRECHECK
0135	REF	1			01,2073	27710 1		
0136					01,2074	30000 1	OCT	30000
0137	REF	2	LAST	122	E7,1674		EBANK=	DELVIMU
0138	REF	1			01,2075	02461 0	2CADR	P47BODY
0138	REF	1			01,2076	50067 0		
0139					01,2077	77777 0	4.4SPOT	OCT 77777
0140	REF	8	LAST	208	E7,1412		EBANK=	TIG
0141	REF	2	LAST	208	01,2100	75262 0	-2CADR	PRECHECK
0141					01,2101	27710 1		
0142					01,2102	05664 0	DEC	2996
0143	REF	6	LAST	206	E6,1466		EBANK=	DAPDATR1
0144	REF	1			01,2103	75517 0	-2CADR	TIG/0
0144	REF	1			01,2104	27711 0		
0145					01,2105	77777 0	4.6SPOT	OCT 77777
0146	REF	9	LAST	206	E7,1412		EBANK=	TIG
0147	REF	3	LAST	208	01,2106	75262 0	-2CADR	PRECHECK
0147					01,2107	27710 1		
0148					01,2110	04700 1	DEC	2496
0149	REF	10	LAST	206	E7,1412		EBANK=	TIG
0150	REF	1			01,2111	75256 1	-2CADR	TIG-5
0150	REF	1			01,2112	27710 1		

R0163 ANY MORE GROUP 4.EVEN RESTART VALUES SHOULD GO HERE

0164					01,2113	00050 1	4.3SPOT	DEC 40
0165	REF	3	LAST	199	E6,1425		EBANK=	PACTOFF
0166	REF	1			01,2114	75170 0	-2CADR	DOTVCON
0166	REF	1			01,2115	27711 0		
0167					01,2116	00240 1	4.5SPOT	DEC 160
0166	REF	4	LAST	208	E6,1425		EBANK=	PACTOFF
0169	REF	1			01,2117	75142 1	-2CADR	DOSTRULL
0169	REF	1			01,2120	27711 0		
0170					01,2121	00764 1	4.7SPOT	DEC 500
0171	REF	5	LAST	208	E6,1425		EBANK=	PACTOFF
0172	REF	1			01,2122	75240 0	-2CADR	TIG-0
0172	REF	1			01,2123	27711 0		
0173					01,2124	00372 1	4.11SPOT	DEC 250
0174	REF	7	LAST	208	E6,1466		EBANK=	DAPDATR1
0175	REF	1			01,2125	74317 1	-2CADR	V97E40.6
0175	REF	1			01,2126	27711 0		
0176					01,2127	00310 0	4.13SPOT	DEC 200
0177	REF	3	LAST	202	E7,1777		EBANK=	WHOCARES
0178	REF	1			01,2130	74352 0	-2CADR	R40ENABL
0178	REF	1			01,2131	27710 1		
0179					01,2132	16000 0	4.15SPOT	OCT 16000
0180	REF	3	LAST	169	E5,1757		EBANK=	OGC

PRELAUNCH OPTICAL VERIFICATION



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1968 KOOLADE .069 PAGE 209

L RESTART TABLES

0161	REP	1		01,2133	02000 0	2CADR	COMPER
0161	REP	1		01,2134	66065 1		
0162				01,2135	16000 0	4.17SPOT	OCT 16000
0163	REP	3	LAST 93	E5,1671		EBANK=	XSM
0164	REP	1		01,2136	03736 0	2CADR	AZ*INC31
0164	REP	1		01,2137	66065 1		
0165	REP	5	LAST 202	01,2140	01672 0	4.21SPOT	GENADR P40TMP
0166	REP	1		01,2141	75413 0	-GENADR	TIGELNK
0167	REP	6	LAST 209	E7,1672		EBANK=	P40TMP
0166	REP	2	LAST 209	01,2142	50067 0	BBCON	TIGELNK
0169				01,2143	12000 1	4.23SPOT	OCT 12000
0190	REP	11	LAST 206	E7,1412		EBANK=	TIG
0191	REP	1		01,2144	02113 0	2CADR	P40S/SV
0191	REP	1		01,2145	50067 0		
0192				01,2146	24000 1	4.25SPOT	OCT 24000
0193	REP	5	LAST 202	0302		EBANK=	BESTI
0194	REP	2	LAST 200	01,2147	02000 0	2CADR	PROG52
0194				01,2150	32060 0		
0195				01,2151	00372 1	4.27SPOT	DEC 250
0196	REP	6	LAST 206	E8,1425		EBANK=	PACTOFF
0197	REP	1		01,2152	75055 0	-2CADR	DOTVCRCS
0197	REP	1		01,2153	27711 0		
0198				01,2154	13000 0	4.31SPOT	OCT 13000
0199	REP	2	LAST 93	E5,1765		EBANK=	STAR
0200	REP	1		01,2155	02524 0	2CADR	RS1 +1
0200	REP	1		01,2156	30065 1		
0201				01,2157	04064 1	4.33SPOT	DEC 2100
0202	REP	5	LAST 206	E6,1661		EBANK=	AOG
0203	REP	1		01,2160	75403 1	-2CADR	WAKEP62
0203	REP	1		01,2161	23711 1		
0204				01,2162	12000 1	4.35SPOT	OCT 12000
0205	REP	6	LAST 206	E8,1466		EBANK=	DAPDATR1
0206	REP	1		01,2163	02155 1	2CADR	POSTURN
0206	REP	1		01,2164	50066 1		
0207				01,2165	00764 1	4.37SPOT	DEC 500
0208	REP	12	LAST 209	E7,1412		EBANK=	TIG
0209	REP	1		01,2166	75275 0	-2CADR	TIGAVEG
0209	REP	1		01,2167	27710 1		
0210				01,2170	17000 1	4.41SPOT	OCT 17000
0211	REP	6	LAST 209	E8,1661		EBANK=	AOG
0212	REP	1		01,2171	02511 0	2CADR	P67.1
0212	REP	1		01,2172	54066 0		
0213	REP	1		01,2173	76003 0	4.43SPOT-GENADR	S61DT
0214	REP	2	LAST 209	E6,1774		EBANK=	S61DT
0215	REP	1		01,2174	75213 0	-2CADR	S61.1C
0215	REP	1		01,2175	23711 1		
0216				01,2176	13000 0	4.45SPOT	OCT 13000
0217	REP	7	LAST 209	E6,1661		EBANK=	AOG

USER=8 PAGE NO. 5 Ew 53

CALLS FOR OPTICS DATA AGAIN (STD LEADIN)

PRELAUNCH AZIMUTH CHANGE

DELTA TIME USED IN SETTING UP
LONG CALL OF TIGBLNK BY P40,P41

PROTECT P40S/SV BY P40 P41

PROTECT CONTINUING JOB TO START P63

PROTECT DISPLAY JOB IN P67

PROTECT TASK TO START PREREAD, ENTRY
S61.1C WILL CHANGE EBANK=EB7 FOR PREREADPROTECT CONTINUING JOB S61.1
(ENTRY IMU ALIGNMENT)



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 26,1966 KOOLADE .069 PAGE 210

L RESTART TABLES

USER'S PAGE NO. 6 E7 S3

0216	REF	1		01,2177	02802 1		2CADR	S61.1A -1
0218	REF	1		01,2200	54066 0			
0219				01,2201	17000 1	4.47SPOT	OCT	17000
0220	REF	6	LAST	E6,1661			EBANK=	AOO
0221	REF	1		01,2202	03006 1		2CADR	PRE-HUNT
0221	REF	1		01,2203	52066 0			
0222				01,2204	77777 0	4.51SPOT	OCT	77777
0223	REF	2	LAST	E6,1704			EBANK=	BODY3
0224	REF	1		01,2205	75463 1		-2CADR	ATERTASK
0224	REF	1		01,2206	07711 1			
0225				01,2207	77777 0	4.53SPOT	DEC	-0
0226	REF	1		E7,1777			EBANK=	END-E7
0227	REF	1		01,2210	74336 1		-2CADR	V97BTASK
0227	REF	1		01,2211	27710 1			
0228				01,2212	13000 0	4.55SPOT	OCT	13000
0229	REF	2	LAST	E7,1451			EBANK=	RTINIT
0230	REF	1		01,2213	02456 1		2CADR	P65.1
0230	REF	1		01,2214	54067 1			
0231	REF	7	LAST	01,2215	76105 1	4.57SPOT-GENADR	P40TMP	
0232	REF	6	LAST	E7,1672			EBANK=	P40TMP
0233	REF	1		01,2216	75352 1		-2CADR	TIGON
0233	REF	1		01,2217	27710 1			
0234				01,2220	77777 0	4.61SPOT	OCT	77777
0235	REF	7	LAST	E6,1425			EBANK=	PACTOFF
0236	REF	1		01,2221	75225 0		-2CADR	IGNITION
0236	REF	1		01,2222	27711 0			
0237				01,2223	77777 0	4.63SPOT	OCT	77777
0238	REF	6	LAST	E6,1425			EBANK=	PACTOFF
0239	REF	1		01,2224	75063 0		-2CADR	DOSPSOFF
0239	REF	1		01,2225	27711 0			
0240				01,2226	00012 1	4.65SPOT	DEC	10
0241	REF	13	LAST	E7,1412			EBANK=	TIG
0242	REF	2	LAST	01,2227	75256 1		-2CADR	TIG-5
0242				01,2230	27710 1			
02421				01,2231	77777 0	4.67SPOT	DEC	-0
024211	REF	2	LAST	E6,1474			EBANK=	CSMASS
024212	REF	1		01,2232	74420 1		-2CADR	V97TTASK
024212	REF	1		01,2233	27711 0			
02422				01,2234	00372 1	4.71SPOT	DEC	250
024221	REF	9	LAST	E6,1466			EBANK=	DAPDATR1
024222	REF	1		01,2235	74403 0		-2CADR	V97TRCS
024222	REF	1		01,2236	27711 0			
02423				01,2237	77777 0	4.73SPOT	DEC	-0
024231	REF	1		E6,1444			EBANK=	V97VCNTR
024232	REF	1		01,2240	74366 1		-2CADR	V97PTASK
024232	REF	1		01,2241	27711 0			
024233				01,2242	77777 0	4.75SPOT	DEC	-0
024234	REF	10	LAST	E6,1466			EBANK=	DAPDATR1
024235	REF	1		01,2243	74324 1		-2CADR	SPSOFF97
024235	REF	1		01,2244	27711 0			

PROTECT HUNTEST ITERATION.

PROTECT FDAI ATTITUDE
ERROR DISPLAY IN P11

EBANK7 FOR TIG

PROTECT P65 RESPONSIVE DISPLAY.

(FOR RCS DAPON)



L RESTART TABLES

USER'S PAGE NO. 7 E0 S3

024236				01,2245	77777 0	4.77SPOT	DEC	-0
024237	REP	9	LAST	210	E6,1425		EBANK=	FACTOFF
024238	REP	2	LAST	206	01,2246	75240 0	-2CADR	TIG-0
024238				01,2247	27711 0			
R0243	ANY MORE GROUP	4.ODD	RESTART VALUES SHOULD GO HERE					
0244				01,2250	32000 0	5.2SPOT	OCT	32000
0245	REP	6	LAST	115	E7,1431		EBANK=	DVCNTR
0246	REP	1		01,2251	03141 0		2CADR	NORMALIZE
0246	REP	1		01,2252	76067 1			
0247				01,2253	00310 0		DEC	200
0248	REP	9	LAST	210	E6,1661		EBANK=	AOG
0249	REP	1		01,2254	74567 0		-2CADR	REREADAC
0249	REP	1		01,2255	01711 1			
0250				01,2256	20000 0	5.4SPOT	OCT	20000
0251	REP	7	LAST	211	E7,1431		EBANK=	DVCNTR
0252	REP	1		01,2257	03007 0		2CADR	SERVICER
0252	REP	1		01,2260	76067 1			
0253				01,2261	00310 0		DEC	200
0254	REP	10	LAST	211	E6,1661		EBANK=	AOG
0255	REP	2	LAST	211	01,2262	74567 0	-2CADR	REREADAC
0255				01,2263	01711 1			
R0256	ANY MORE GROUP	5.EVEN	RESTART VALUES SHOULD GO HERE					
0257				01,2264	00310 0	5.3SPOT	DEC	200
0258	REP	11	LAST	211	E6,1661		EBANK=	AOG
0259	REP	3	LAST	211	01,2265	74567 0	-2CADR	REREADAC
0259				01,2266	01711 1			
0260				01,2267	77777 0	5.5SPOT	OCT	77777
0261	REP	12	LAST	211	E6,1661		EBANK=	AOG
0262	REP	1		01,2270	75123 0		-2CADR	REDOS.5
0262	REP	1		01,2271	01711 1			
0263				01,2272	20000 0	5.7SPOT	OCT	20000
0264	REP	4	LAST	209	E5,1671		EBANK=	XSM
0265	REP	1		01,2273	02456 1		2CADR	RSIGTS1
0265	REP	1		01,2274	66065 1			
0266				01,2275	77777 0	5.11SPOT	OCT	77777
0267	REP	5	LAST	211	E5,1671		EBANK=	XSM
0268	REP	1		01,2276	75174 1		-2CADR	ALLOOP1
0268	REP	1		01,2277	11712 0			
0269				01,2300	20000 0	5.13SPOT	OCT	20000
0270	REP	6	LAST	211	E5,1671		EBANK=	XSM
0271	REP	1		01,2301	02527 0		2CADR	WTLISINT
0271	REP	1		01,2302	66065 1			
0272				01,2303	20000 0	5.15SPOT	OCT	20000
0273	REP	7	LAST	211	E5,1671		EBANK=	XSM
0274	REP	1		01,2304	03317 1		2CADR	RESTEST1
0274	REP	1		01,2305	66065 1			
0275				01,2306	20000 0	5.17SPOT	OCT	20000
0276	REP	8	LAST	211	E5,1671		EBANK=	XSM

USED BY PRELAUNCH



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 26,1968 KOOLADE .069 PAGE 212

USER'S PAGE NO. 8 E7 S3

L RESTART TABLES

0277	REF	1		01,2307	05112 0	2CADR	GEOSTR4
0277	REF	1		01,2310	04085 0		
0278				01,2311	20000 0	5.21SPOT	OCT 20000
0279	REF	9	LAST 211	E5,1671		EBANK=	XSM
0280	REF	1		01,2312	02837 1	2CADR	ALPLT1
0280	REF	1		01,2313	66085 1		
0281				01,2314	77777 0	5.23SPOT	OCT 77777
0282	REF	10	LAST 212	E5,1671		EBANK=	XSM
0283	REF	1		01,2315	75151 0	-2CADR	SPECSTS
0283	REF	1		01,2316	11712 0		
0284				01,2317	20000 0	5.25SPOT	OCT 20000
0285	REF	11	LAST 212	E5,1671		EBANK=	XSM
0288	REF	1		01,2320	03330 1	2CADR	RETEST3
0288	REF	1		01,2321	66085 1		
0287				01,2322	20000 0	5.27SPOT	OCT 20000
0288	REF	12	LAST 212	E5,1671		EBANK=	XSM
0289	REF	1		01,2323	03276 1	2CADR	RESTAT1R
0289	REF	1		01,2324	66085 1		
0290				01,2325	77777 0	5.31SPOT	OCT 77777
0291	REF	6	LAST 211	E7,1431		EBANK=	DVCNTR
0292	REF	1		01,2326	75167 0	-2CADR	REDO5.31
0292	REF	1		01,2327	01710 0		
0293				01,2330	20000 0	5.33SPOT	OCT 20000
0294	REF	13	LAST 212	E5,1671		EBANK=	XSM
0295	REF	1		01,2331	03353 1	2CADR	RESQNG
0295	REF	1		01,2332	66085 1		
0296				01,2333	00000 1	5.35SPOT	DEC 0
0297				01,2334	00000 1	2DEC	0
0297				01,2335	00000 1		
0298				01,2336	77777 0	5.37SPOT	OCT 77777
0299	REF	13	LAST 211	E6,1661		EBANK=	AGC
0300	REF	1		01,2337	75041 0	-2CADR	CHEKAVEG
0300	REF	1		01,2340	01711 1		
0301				01,2341	77777 0	5.41SPOT	OCT 77777
0302	REF	9	LAST 212	E7,1431		EBANK=	DVCNTR
0303	REF	1		01,2342	75173 0	-2CADR	PREREAD
0303	REF	1		01,2343	01710 0		
R0304	ANY MORE GROUP 5.000 RESTART VALUES SHOULD GO HERE						
0305				01,2344	77777 0	6.2SPOT	OCT 77777
0306	REF	4	LAST 173	E6,1476		EBANK=	AK
0307	REF	1		01,2345	75737 0	-2CADR	PRE40.6
0307	REF	1		01,2346	37711 1		
0308				01,2347	00144 0	DEC	100
0309	REF	2	LAST 121	E7,1660		EBANK=	TIOGO
0310	REF	1		01,2350	74805 1	-2CADR	CLOCKTASK
0310	REF	1		01,2351	27710 1		

R0311 ANY MORE 8.000 RESTART VALUES SHOULD GO HERE

TO PROTECT PREREAD AT TIG-30A
TIG-15 T+60

USED BY P40 AFTER GIMB DR TST TO REPOS=N
ENGINE UNTIL TVCDAPON



L RESTART TABLES

USER=3 PAGE NO. 9 E0 S3

0312				01,2352	00144 0	6.3SPOT	DEC	100
0313	REF	14	LAST	210	E7,1412		ERANK=	TIG
0314	REF	2	LAST	212	01,2353	74605 1	-2CADR	CLOCKTASK
0314					01,2354	27710 1		
0315					01,2355	30000 1	6.5SPOT	OCT 30000
0316	REF	5	LAST	207	E3,1708		ERANK=	TEPHEN
0317	REF	1			01,2356	03564 0	2CADR	TIMEDIDR
0317	REF	1			01,2357	56063 1		
0318					01,2360	00000 1	6.7SPOT	OCT 0
0319					01,2361	00000 1		OCT 0
0320					01,2362	00000 1		OCT 0
0321	REF	2	LAST	110	01,2363	76052 1	6.11SPOT-GENADR	CM/GYMDT
0322	REF	3	LAST	213	E6,1725		ERANK=	CM/GYMDT
0323	REF	1			01,2364	75323 1	-2CADR	READGYMB
0323	REF	1			01,2365	45711 1		
0324					01,2366	00000 1	6.13SPOT	DEC 0
0325					01,2367	00000 1		DEC 0
0326					01,2370	00000 1		DEC 0

PROTECT INCREMENTING OF TIME2, TIME1 BY
(P27NUPDATE PROGRAM)PROTECT TASK TO READ CDUS.
FOR ENTRY DAP



L RESTART TABLES

USER=5 PAGE NO. 10 E0 S3

R0330 PROGRAM DESCRIPTION' NEWPHASE

R0332 MOD' 1

R0334 MOD BY' COPPS

R0336 FUNCTIONAL DESCRIPTION'

R0337

R0339

DATE' 11 NOV 1966

ASSEMBLY' SUNBURST REV

LOG SECTION' PHASE TABLE MAINTENANCE

NEWPHASE IS THE QUICK WAY TO MAKE A NON VARIABLE PHASE CHANGE. IT INCLUDES THE OPTION OF SETTING
THASE OF THE GROUP. IF THASE IS TO BE SET, -C(TIME1) IS STORED IN THE THASE TABLE AS FOLLOWS'

R0341 (L-1) THASE0
R0342 (L) THASE1 (IF GROUP=1)
R0343 (L+1)
R0344 (L+2) THASE2 (IF GROUP=2)
R0345 -----
R0346 (L+6) THASE4 (IF GROUP=4)
R0347 (L+7)
R0348 (L+8) THASE5 (IF GROUP=5)

R0349 IN ANY CASE, THE NEGATIVE OF THE PHASE, FOLLOWED (IN THE NEXT REGISTER) BY THE PHASE, IS STORED IN THE
R0351 PHASE TABLE AS FOLLOWS'

R0352 (L) -PHASE1 (IF GROUP=1)
R0353 (L+1) PHASE1
R0354 (L+2) -PHASE2 (IF GROUP=2)
R0355 (L+3) PHASE2
R0356 -----
R0357 (L+7) PHASE4
R0358 (L+8) -PHASE5 (IF GROUP=5)
R0359 (L+9) PHASE5

R0360 CALLING SEQUENCE'

R0361 EXAMPLE IS FOR PLACING A PHASE OF FIVE INTO GROUP THREE'

R0362 1) IF THASE IS NOT TO BE SET'

A0363 L-1 CA FIVE
A0364 L TC NEWPHASE
A0365 L+1 OCT 00003

R0366 2) IF THASE IS TO BE SET'

A0367 L-1 Cs FIVE
A0368 L TC NEWPHASE
A0369 L+1 OCT 00003

R0370 SUBROUTINES CALLED' NONE

R0371 NORMAL EXIT MODE' AT L+2 OF CALLING SEQUENCE

R0372 ALARM OR ABORT EXITS' NONE

R0373 OUTPUT' PHASE TABLE AND THASE TABLE UPDATED

R0374 ERASABLE INITIALIZATION REQ'D' NONE



L RESTART TABLES

USER=3 PAGE NO. 11 E0 S3

R0375 DEBRIS' A,L,TEMPG

R0376 ***WARNING*** THIS PROGRAM IS TO BE PLACED IN FIXED-FIXED AND UNSWITCHED ERASABLE.

0378				4114		BLOCK 02	
0379	REP	1		4000		SETLOC FFTAG1	
0380				4114		BANK	
0381	REP	1				COUNT* \$\$/PHASE	
0382				4114	0 0004 0	NEWPHASE INHINT	
0383	REP	14	LAST	198	4115 54 001 1	TS L	SAVE FOR FURTHER USE
0384	REP	19	LAST	188	4118 50 002 0	NDX 0	OBTAIN THE GROUP NUMBER
0385					4117 3 0000 1	CA 0	
0386	REP	20	LAST	215	4120 24 002 0	INCR 0	OBTAIN THE RETURN ADDRESS
0387					4121 6 0000 1	DOUBLE	SAVE THE GROUP IN A FORM USED FOR
0388	REP	1			4122 54 061 1	TS TEMPG	INDEXING
0389	REP	15	LAST	215	4123 10 001 1	CCS L	SEE IF WE ARE TO SET TRASE
0390					4124 1 4133 0	TCP +7	NO, THE DELTA T WAS POSITIVE
0391					4125 1 4133 0	TCP +6	
0392	REP	53	LAST	199	4126 24 000 1	NUFAZ+10 INCR A	SET TRASE AND STORE PHASE CORRECTLY
0393	REP	16	LAST	215	4127 54 001 1	TS L	
0394	REP	3	LAST	128	4130 4 0025 1	CS TIME1	SET TRASE
0395	REP	2	LAST	215	4131 50 061 0	NDX TEMPG	
0396	REP	1			4132 55*051 0	TS TRASE1 -2	
0397	REP	17	LAST	215	4133 4 0001 1	CS L	NOW PUT THE PHASE IN THE RIGHT TABLE LOC
0398	REP	3	LAST	215	4134 50 061 0	NDX TEMPG	
0399	REP	4	LAST	197	4135 52 751 0	DXCH -PHASE1 -2	
0400					4136 0 0003 1	RELINT	
0401	REP	21	LAST	215	4137 0 0002 0	TC 0	NOW RETURN TO CALLER

L SXTMARK

USER'S PAGE NO. 1 E0 S3

R0001 PROGRAM NAME - SXTMARK
 R0002 PROGRAM MODIFIED BY 256/276 PROGRAMMERS
 R0003 MOD BY- R. MELANSON TO ADD DOCUMENTATION

DATE- 5 APRIL 1967
 LOG SECTION SXTMARK
 ASSEMBLY SUNDISK REV. 116

R0004 FUNCTIONAL DESCRIPTION-

R0005 SXTMARK IS CALLED FROM INTERNAL ROUTINES WHICH MAY REQUIRE STAR OR LANDMARK MARKINGS BY THE ASTRONAUT. IF
 R0007 THE MARK SYSTEM IS NOT IN USE, SXTMARK RESERVES A VAC AREA FOR MARKING AND REQUESTS EXECUTION OF THE MKVB51
 R0009 ROUTINE VIA THE EXECUTIVE JOB PRIORITY LIST. R21 USES THIS ROUTINE TO DETERMINE IF THE MARK SYSTEM CAN BE
 R0011 USED. IF YES, SXTMARK RETURNS TO R21 TO PERFORM ITS OWN MARK REQUESTS VIA THE V51 FLASH.

R0013 CALLING SEQUENCE-

R0014
 R0015 CAP (NO. MARK REQUESTS IN BITS 1-3 OF A)
 R0016 TC BANKCALL
 R0017 CADR SXTMARK

R0018 NORMAL EXIT MODE-

R0019 SWRETURN

R0020 ALARM OR ABORT EXIT MODE-

R0021 ABORT

R0022 OUTPUT-

R0023 1) MARKSTAT CONTAINS MARK VALUE (BITS 14-12) AND VAC AREA ADDRESS
 R0024 2) QPRET = VAC AREA POINTER VALUE
 R0025 3) 1ST WORD OF RESERVED VAC AREA SET TO +0
 R0026 4) PRIO32 PLACED IN A REGISTER

R0027 ERASABLE INITIALIZATION-

R0028 1) BITS 1-3 OF A = NO. MARKS REQUESTED
 R0029 2) BITS 2,3 OF EXTVBACT = 0
 R0030 3) A VAC AREA MUST BE AVAILABLE (WORD 1 = ADDRESS OF VAC AREA)

R0031 DEBRIS-

R0032 A,Q,L, RUPTREG1, MARKSTAT, QPRET, BIT2 OF EXTVBACT

0033				13,2036		BANK 13
0034	REF	1		07,2000		SETLOC SXTMARK
0035				07,2002		BANK

0036	REF	5	LAST	126	E7,1725	EBANK= MRKBUF1
0037	REF	1				COUNT 07/SXTMK

0038						SXTMARK INHINT
0039	REF	15	LAST	156	07,2002 0 0004 0	TS RUPTREG1
					07,2003 54 070 1	NUMBER OF MARKS WANTED

0040	REF	6	LAST	183	07,2004 3 6211 0	CAP SIX	BIT2 = MARKING SYSTEM IN USE
0041	REF	4	LAST	186	07,2005 7 1044 1	MASK EXTVBACT	BIT3 = EXTENDED VERR IN PROGRESS
0042	REF	54	LAST	215	07,2006 10 000 0	CCS A	
0043	REF	1			07,2007 0 2013 1	TC MKABORT	SET THEREFORE ABORT



L SXTMARK

USER'S PAGE NO. 2 E7 S3

0044	REF	18	LAST	165	07,2010	3 4711 1	CAP	BIT2
0045	REF	5	LAST	216	07,2011	27=044 1	ADS	EXTVBACT
0048	REF	1			07,2012	0 2015 1	TC	MARKOK
0047	REF	1			07,2013	0 5604 0	MCABORT	TC
0048					07,2014	01211 1	OCT	BAILOUT
0049	REF	3	LAST	189	07,2015	10 400 1	MARKOK	OCT
0050	REF	1			07,2016	0 2031 1	CCS	01211
0051	REF	2	LAST	167	07,2017	10 454 0	TC	VAC1USE
0052	REF	2	LAST	217	07,2020	0 2031 1	TC	MCVACFND
0053	REF	2	LAST	187	07,2021	10 530 0	CCS	VAC2USE
0054	REF	3	LAST	217	07,2022	0 2031 1	TC	MCVACFND
0055	REF	2	LAST	187	07,2023	10 804 1	CCS	VAC3USE
0056	REF	4	LAST	217	07,2024	0 2031 1	TC	MCVACFND
0057	REF	2	LAST	167	07,2025	10 860 0	CCS	VAC4USE
0058	REF	5	LAST	217	07,2028	0 2031 1	TC	MCVACFND
0059	REF	2	LAST	217	07,2027	0 5604 0	TC	BAILOUT
0080					07,2030	01207 0	OCT	01207
0061	REF	1			07,2031	6 4711 1	MCVACFND	AD
0082	REF	2	LAST	168	07,2032	55=330 1	TS	TWO
0063	REF	55	LAST	216	07,2033	50 000 1	INDEX	MARKSTAT
0064	REF	1			07,2034	54 052 1	TS	A
0065	REF	16	LAST	203	07,2035	3 4714 1	CAP	QPRET
0066	REF	3	LAST	217	07,2036	51=330 0	INDEX	STORE NEXT AVAILABLE MARK SLOT
0087					07,2037	53=777 0	TS	SHOW VAC AREA OCCUPIED
0068	REF	1			07,2040	0 5253 0	TC	BACKUP MARK ROUTINE USES SXTMARK
0069					07,2041	00065 1	MM	
0070					07,2042	1 2044 1	TCF	53
0071	REF	1			07,2043	1 4570 0	TCF	+2
0072	REF	2	LAST	217	07,2044	0 5253 0	TC	SWRETURN
0073					07,2045	00086 1	TC	CHECKMM
0074					07,2046	1 2050 1	MM	54
0075	REF	2	LAST	217	07,2047	1 4570 0	TCF	+2
0076	REF	11	LAST	198	07,2050	3 4877 0	TCF	SWRETURN
0077					07,2051	0 0006 1	CAP	BIT12
0078	REF	16	LAST	216	07,2052	7 0070 1	EXTEND	
0079	REF	18	LAST	215	07,2053	58 001 0	MP	RUPTREG1
0080	REF	4	LAST	217	07,2054	27=330 1	XCH	L
0081	REF	1			07,2055	3 7667 1	ADS	MARKSTAT
0082	REF	2	LAST	132	07,2058	0 5027 1	CAP	PRI032
0083	REF	5	LAST	217	1330		TC	NOVAC
0084	REF	1			07,2057	02348 1	EBANK=	MARKSTAT
0084	REF	1			07,2080	18082 1	ZCADR	MCVB51
0085					07,2061	0 0003 1	RELINT	
0086	REF	3	LAST	217	07,2062	1 4570 0	TCF	SWRETURN

NOT SET
SET IT, RESET IN ENDMARK
YES, FIND VAC AREA

FIND VAC AREA

ADDRESS OF VAC AREA

STORE NEXT AVAILABLE MARK SLOT

SHOW VAC AREA OCCUPIED

BACKUP MARK ROUTINE USES SXTMARK

DESIRED NUMBER OF MARKS IN .12-14

ENTER MARK JOB

SAME AS MODREXIT



L SXTMARK

USER'S PAGE NO. 3 E7 S3

R0087 PROGRAM NAME - MKRELEAS
R0088 PROGRAM MODIFIED BY 258/278 PROGRAMMERS
R0089 MOD BY- R. MELANSON TO ADD DOCUMENTATION

DATE- 5 APRIL 1967
LOG SECTION SXTMARK
ASSEMBLY SUNDISK REV. 116

R0090 FUNCTIONAL DESCRIPTION-

R0091 MKRELEAS IS EXECUTED BY INTERNAL ROUTINES TO RELEASE THE MARK SYSTEM TO MAKE IT AVAILABLE TO OTHER INTERNAL
R0093 SYSTEM ROUTINES. IT ALSO CLEARS THE COARSE OPTICS FLAG BIT AND DISABLES THE OPTICS ERROR COUNTER.

R0095 CALLING SEQUENCE-

R0096 TC BANKCALL
R0097 CADR MKRELEAS

R0098 NORMAL EXIT MODE-
R0099 SWRETURN

R0100 ALARM OR ABORT EXIT MODE- NONE

R0101 OUTPUT-

R0102 1) BIT9 OPTMODES SET TO 0
R0103 2) OPTIND SET TO -1
R0104 3) 1ST WORD OF VAC AREA SET TO VAC ADDRESS TO SIGNIFY AVAILABILITY.
R0105 4) MARKSTAT CLEARED
R0106 5) BIT2 CHANNEL 12 SET TO 0

R0107 ERASABLE INITIALIZATION- NONE

R0108 DEBRIS-

R0109 A, MARKSTAT, BIT9 OPTMODES, OPTIND, BIT2 CHANNEL 12

0110	REF	19	LAST	217	07,2063	3 4714 1	MKRELEAS CAP	ZERO	SHOW MARK SYSTEM NOW AVAILABLE
0111	REF	6	LAST	217	07,2064	57*330 0	XCH	MARKSTAT	
0112	REF	56	LAST	217	07,2065	10 000 0	CCS	A	
0113	REF	57	LAST	218	07,2066	50 000 1	INDEX	A	
0114					07,2067	54 000 0	TS	0	
0115					07,2070	0 0004 0	MKRELEAS	INHINT	
0116	REF	16	LAST	159	07,2071	4 4702 1	CS	BIT9	COARSE OPTICS RETURN FLAG.
0117	REF	31	LAST	163	07,2072	7 1331 0	MASK	OPTMODES	
0118	REF	32	LAST	218	07,2073	55*331 0	TS	OPTMODES	
0119	REF	6	LAST	199	07,2074	3 7716 0	CA	NEGONE	
0120	REF	17	LAST	199	07,2075	55*303 1	TS	OPTIND	KILL COARS OPTICS
0121	REF	19	LAST	217	07,2076	4 4711 0	CS	BIT2	DISABLE OPTICS ERROR COUNTER
0122					07,2077	0 0006 1	EXTEND		
0123	REF	20	LAST	180	07,2100	03 012 1	WAND	CHAN12	
0124					07,2101	0 0003 1	RELINT		
0125	REF	4	LAST	217	07,2102	0 4570 1	TC	SWRETURN	



L SXTMARK

USER=3 PAGE NO. 4 E7 83

R0126 PROGRAM NAME - MARKRUPT DATE- 5 APRIL 1967
R0127 PROGRAM MODIFIED BY 256/276 PROGRAMMERS LOG SECTION SXTMARK
R0128 MOD BY- R. MELANSON TO ADD DOCUMENTATION ASSEMBLY SUNDISK REV. 116

R0129 FUNCTIONAL DESCRIPTION-
R0130 MARKRUPT STORES CDUS, OPTICS AND TIME AND TRANSFERS CONTROL TO THE MARKIT, MARK REJECT OR KEYCOM ROUTINES IF
R0132 BITS IN CHANNEL 16 ARE SET AS REQUIRED.

R0133 CALLING SEQUENCE-
R0134 ROUTINE ENTERED VIA KEYRUPT2 WHEN MARK, MARK REJECT OR DSKY KEYS DEPRESSED BY THE OPERATOR.

R0136 NORMAL EXIT MODE-
R0137 MARKIT, MKREJECT OR POSTJUMP ROUTINES (MARK, MARK REJECT OR DSKY CODE)

R0138 ALARM OR ABORT EXIT MODE-
R0139 ALARM AND RESUME

R0140 OUTPUT-
R0141 RUPTSTOR+5 = CDUT, RUPTSTOR+3 = CDUS, RUPTSTOR+2 = CDUY,
R0142 RUPTREG3 = CDUZ, RUPTSTOR+6 = CDUX, RUPTSTOR+1 AND SAMPTIME+1 = TIME1,
R0143 RUPTSTOR AND SAMPTIME = TIME2

R0144 ERASABLE INITIALIZATION-
R0145 CDUT, CDUS, CDUY, CDUZ, CDUX, TIME2, TIME1, CHANNEL 16 BITS 6,7 OR 1-5

R0146 DEBRIS-
R0147 A, CRUPT, RUPTREG3, SAMPTIME, SAMPTIME+1, RUPTSTOR TO RUPTSTOR+6 EXCEPT RUPTSTOR+4 (LOCATION 67)

0149	REP	2	LAST	129	07,2103	54 016 1	MARKRUPT TS	BANKRUPT	STORE CDUS AND OPTICS NOW
0150	REP	5	LAST	164	07,2104	3 0035 1	CA	CDUT	
0151	REP	1			07,2105	54 362 1	TS	MKCDUT	
0152	REP	6	LAST	166	07,2106	3 0036 1	CA	CDUS	
0153	REP	1			07,2107	54 360 0	TS	MKCDUS	
0154	REP	1			07,2110	3 0033 1	CA	CDUY	
0155	REP	1			07,2111	54 357 1	TS	MKCDUY	
0156	REP	3	LAST	166	07,2112	3 0034 0	CA	CDUZ	
0157	REP	1			07,2113	54 361 1	TS	MKCDUZ	
0158	REP	2	LAST	166	07,2114	3 0032 0	CA	CDUX	
0159	REP	1			07,2115	54 363 0	TS	MKCDUX	
0160					07,2116	0 0006 1	EXTEND		
0161	REP	6	LAST	175	07,2117	3 0025 0	DCA	TIME2	GET TIME
0162	REP	1			07,2120	52 356 0	DXCH	MKT2T1	
0163					07,2121	0 0006 1	EXTEND		
0164	REP	2	LAST	219	07,2122	3 0356 1	DCA	MKT2T1	
0165	REP	1			07,2123	52 014 0	DXCH	SAMPTIME	RUPT TIME FOR NOUN 65.
0166	REP	22	LAST	215	07,2124	56 002 0	XCH	0	
0167	REP	2	LAST	129	07,2125	54 012 0	TS	CRUPT	
0168	REP	23	LAST	195	07,2126	3 4705 1	CAP	BITS	SEE IF MARK OR MKREJECT



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28,1966 KOOLADE .069 PAGE 220

L SCITMARK

USERS PAGE NO. 5 E7 S3

0169				07,2127	0 0006 1	EXTEND	
0170	REF	3	LAST	165	07,2130	02 016 1	RAND NAVKEYIN
0171	REF	56	LAST	218	07,2131	10 000 0	CCS A
0172	REF	1			07,2132	0 2427 1	TC MARKIT
0173	REF	23	LAST	197	07,2133	3 4704 0	CAP BIT7
0174					07,2134	0 0006 1	EXTEND
0175	REF	4	LAST	220	07,2135	02 016 1	RAND NAVKEYIN
0176	REF	59	LAST	220	07,2136	10 000 0	CCS A
0177	REF	1			07,2137	0 2300 0	TC MKREJECT
0178	REF	2	LAST	185	07,2140	3 4362 1	KEYCALL CAP OCT37
0179					07,2141	0 0006 1	EXTEND
0180	REF	5	LAST	220	07,2142	02 016 1	RAND NAVKEYIN
0181					07,2143	0 0006 1	EXTEND
0182					07,2144	1 2147 0	BZF +3
0183	REF	6	LAST	196	07,2145	0 4574 0	TC POSTJUMP
0184	REF	1			07,2146	17622 1	CADR KEYCOM
0185	REF	12	LAST	194	07,2147	0 5537 0	+3 TC ALARM
0186					07,2150	00113 1	OCT 113
0187	REF	18	LAST	165	07,2151	0 5222 0	TC RESUME

ITS A MARK

NOT A MARK, SEE IF MKREJECT

ITS A MARK REJECT

NOT MARK OR MKREJECT, SEE IF KEYCODE

IF NO INBITS

IT,S A KEY CODE, NOT A MARK.

ALARM IF NO INBITS



L SXTMARK

USER=S PAGE NO. 6 E7 S3

R0188 PROGRAM NAME - MARKCONT

DATE- 19 SEPT 1967

R0189 PROGRAM MODIFIED BY 258/278 PROGRAMMERS

LOG SECTION SXTMARK

R0190 MOD BY- R. MELANSON TO ADD DOCUMENTATION

ASSEMBLY SUNDISK REV. 116

R0191 FUNCTIONAL DESCRIPTION-

R0192 MARKCONT IS USED TO PERFORM A SPECIAL MARK FUNCTION FOR R21, TO EXECUTE A SPECIAL DISPLAY OF OPTICS AND TIME OR
R0194 TO PERFORM A MARK OF A STAR OR LAND SIGHTING BASED UPON FLASHING V-N.

R0195 CALLING SEQUENCE-

R0196 FROM MARKDIP

R0197 NORMAL EXIT MODE-

R0198 TASKOVER

R0199 ALARM OR ABORT EXIT MODE-

R0200 ALARM AND TASKOVER

R0201 OUTPUT-

R0202 1) FOR R21-

R0203 EBANK=EBANK7

R0204 MRKBUF1 TO MRKBUF1+6 = TIME2, TIME1, CDUY, OPTICX, CDUZ, OPTICSY, CDUX OF CURRENT R21 MARK FUNCTION.

R0206 MRKBUF2 TO MRKBUF2+6 CONTAINS PREVIOUS R21 MARK VALUES.

R0207 2) FOR SPECIAL DISPLAY JOB-

R0208 RUPTREG1 AND MRKBUF1 = CDUS, RUPTREG2 AND MRKBUF1 +1 = CDUT,

R0209 RUPTREG3 AND MRKBUF1 +2 = TIME2, RUPTREG4 AND MRKBUF1 +3 = TIME1

R0210 3) FOR NORMAL MARKING-

R0211 DECREMENT BITS14-12 OF MARKSTAT BY 1,

R0212 BIT10 MARKSTAT SET TO 1, INCREMENT OPRET BY 7,

R0213 STORE TIME2, TIME1, CDUY, CDUS, CDUZ, CDUT AND CDUX IN VAC+1 TO VAC+7

R0214 ERASABLE INITIALIZATION-

R0215 1) FOR R21-

R0216 BIT14 OF STATE+2 =1, MRKBUF1 TO MRKBUF1+6, ITEMP1, RUPTREG3,

R0217 RUPTSTOR TO RUPTSTOR+6 EXCEPT RUPTSTOR+4

R0218 2) FOR SPECIAL DISPLAY JOB-

R0219 BIT14 OF STATE+2 =0, MARKSTAT =+0, RUPTREG1, RUPTREG2, RUPTREG3

R0220 RUPTREG4, RUPTSTOR, RUPTSTOR+1, RUPTSTOR+3, RUPTSTOR+5,

R0221 BIT12 OF STATE+5 (V59 FLAG), MRKBUF1 THRU MRKBUF1+3

R0222 3) FOR NORMAL MARKING-

R0223 BIT14 OF STATE+2 =0, MARKSTAT =VAC ADDRESS, A REG, ITEMP1, RUPTREG3,

R0224 RUPTSTOR TO RUPTSTOR+6 EXCEPT RUPTSTOR+4

R0225 DEBRIS-

R0226 1) FOR R21-

R0227 A, ITEMP1, MRKBUF1, MRKBUF2

R0228 2) FOR SPECIAL DISPLAY JOB-

R0229 A, RUPTREG1, RUPTREG2, RUPTREG3, RUPTREG4, MPAC TO MPAC+3

R0230 3) FOR NORMAL MARKING-

R0231 A, MARKSTAT, ITEMP1, OPRET, VAC+1 TO VAC+7 OF VAC AREA IN USE



L SCIMARK

USER-S PAGE NO. 7 ET S3

0232	REF	23	LAST	166	07,2152	3 4675 1	MARKCONT	CAP	BIT14
0233	REF	30	LAST	161	07,2153	7 0076 1		MASK	STATE +2
0234					07,2154	0 0008 1		EXTEND	
0235	REF	1			07,2155	1 2167 1		BZF	MARKET
0236	REF	7	LAST	216	07,2156	3 6211 0	MARKIT1	CAP	SIX
0237	REF	1			07,2157	0 5475 1		TC	GENTRAN
0238	REF	6	LAST	216	07,2160	01725 0		ADRES	MRKBUP1
0239	REF	5	LAST	207	07,2161	01734 0		ADRES	MRKBUP2
0240	REF	8	LAST	222	07,2162	3 6211 0		CAP	SIX
0241	REF	2	LAST	222	07,2163	0 5475 1		TC	GENTRAN
0242	REF	3	LAST	219	07,2164	00355 1		ADRES	MKT2T1
0243	REF	7	LAST	222	07,2165	01725 0		ADRES	MRKBUP1
0244	REF	4	LAST	160	07,2166	1 5213 0		TCF	TASKOVER
0245	REF	7	LAST	216	07,2167	11*330 1	MARKET	CCS	MARKSTAT
0246	REF	1			07,2170	0 2224 1		TC	MARK2
0255	REF	2	LAST	217	07,2171	3 4711 1		CAP	TWO
0256	REF	6	LAST	217	07,2172	7 1044 1		MASK	EXTVRACT
0257					07,2173	0 0008 1		EXTEND	
0258	REF	1			07,2174	1 2216 1		BZF	MARKET3
0259	REF	12	LAST	217	07,2175	3 4877 0		CAP	BIT12
0260	REF	31	LAST	222	07,2176	7 0101 0		MASK	STATE +5
0261					07,2177	0 0008 1		EXTEND	
0262	REF	2	LAST	222	07,2200	1 2216 1		BZF	MARKET3
0263	REF	2	LAST	196	07,2201	3 4754 0		CAP	PRI05
0264	REF	3	LAST	217	07,2202	0 5027 1		TC	NOVAC
0265	REF	8	LAST	222	07,1725			EBANK=	MRKBUP1
0266	REF	1			07,2203	02405 1		2CADR	MARKDISP
0266	REF	1			07,2204	76067 1			
02661	REF	9	LAST	222	07,2205	3 6211 0		CAP	SIX
02662	REF	3	LAST	222	07,2206	0 5475 1		TC	GENTRAN
02663	REF	4	LAST	222	07,2207	00355 1		ADRES	MKT2T1
02664	REF	6	LAST	171	07,2210	01674 0		ADRES	MARKDOWN
02665	REF	10	LAST	222	07,2211	3 6211 0		CAP	SIX
02666	REF	4	LAST	222	07,2212	0 5475 1		TC	GENTRAN
02667	REF	5	LAST	222	07,2213	00355 1		ADRES	MKT2T1
02668	REF	9	LAST	222	07,2214	01725 0		ADRES	MRKBUP1
0267	REF	5	LAST	222	07,2215	1 5213 0		TCF	TASKOVER
0268	REF	13	LAST	220	07,2216	0 5537 0	MARKET3	TC	ALARM
0269					07,2217	00122 0		OCT	122
0270	REF	6	LAST	222	07,2220	1 5213 0		TCF	TASKOVER
0271	REF	14	LAST	222	07,2221	0 5537 0	114ALM	TC	ALARM
0272					07,2222	00114 0		OCT	114
0273	REF	7	LAST	222	07,2223	1 5213 0		TCF	TASKOVER

R21 MARK (SPECIAL MARKING FOR R21)

NOT SET THEREFORE REGULAR MARKING
SPECIAL FOR R21
TRANSFER MRKBUP1 TO MRKBUP2

TRANSFER CURRENT MARK DATA TO MARKBUP1

SEE IF MARKS CALLED FOR
COLLECT MARKS

IS MARKING SYSTEM IN USE (BIT2)

MARKING NOT CALLED FOR

V59FLAG

IF V59FLAG NOT SET-MARK UNCALLED FOR
CALIBRATION MARK (SET) FOR P23
SPECIAL DISPLAY JOB

TRANSFER MARK DATA TO MARKDOWN

TRANSFER MARK DATA TO MRKBUP1 FOR
SPECIAL DISPLAY OF SHAFT AND TRUNNION
IF V59 ACTING

MARKING NOT CALLED FOR

MARK NOT WANTED



L EXTMARK

USER=8 PAGE NO. 8 E7 S3

P0274 STORE MARK DATA IN MKVAC AND INCREMENT POINTER

0275	REF	1		07,2224	6 7711 1	MARK2	AD	74K
0276				07,2225	0 0006 1		EXTEND	
0277	REF	1		07,2226	6 2221 1		BZMP	114ALM
0278	REF	8	LAST	222	07,2227	55=330 1	TS	MARKSTAT
0279					07,2230	4 0000 0	COM	
0280	REF	16	LAST	162	07,2231	7 4701 1	MASK	BIT10
0281	REF	9	LAST	223	07,2232	27=330 1	ADS	MARKSTAT
0282	REF	1		07,2233	7 4741 0		MASK	LOW9
0283	REF	7	LAST	164	07,2234	54 061 1	TS	ITEMP1
0284	REF	60	LAST	220	07,2235	50 000 1	INDEX	A
0285	REF	2	LAST	217	07,2236	56 052 0	XCH	OPRET
0286	REF	3	LAST	66	07,2237	54 062 1	TS	ITEMP2
0287	REF	3	LAST	159	07,2240	6 4716 0	AD	SEVEN
0288	REF	8	LAST	223	07,2241	50 061 0	INDEX	ITEMP1
0289	REF	3	LAST	223	07,2242	54 052 1	TS	OPRET
0290				07,2243	0 0006 1	VACSTOR	EXTEND	
0291	REF	6	LAST	222	07,2244	3 0356 1	DCA	MKT2T1
0292	REF	4	LAST	223	07,2245	50 062 0	INDEX	ITEMP2
0293				07,2246	52 001 1		DXCH	0
0294	REF	2	LAST	219	07,2247	3 0357 0	CA	MKCDUY
0295	REF	5	LAST	223	07,2250	50 062 0	INDEX	ITEMP2
0296				07,2251	54 002 1		TS	2
0297	REF	2	LAST	219	07,2252	3 0360 1	CA	MKCDUS
0298	REF	6	LAST	223	07,2253	50 062 0	INDEX	ITEMP2
0299				07,2254	54 003 0		TS	3
0300	REF	2	LAST	219	07,2255	3 0361 0	CA	MKCDUZ
0301	REF	7	LAST	223	07,2256	50 062 0	INDEX	ITEMP2
0302				07,2257	54 004 1		TS	4
0303	REF	2	LAST	219	07,2260	3 0362 0	CA	MKCDUT
0304	REF	6	LAST	223	07,2261	50 062 0	INDEX	ITEMP2
0305				07,2262	54 005 0		TS	5
0306	REF	2	LAST	219	07,2263	3 0363 1	CA	MKCDUX
0307	REF	9	LAST	223	07,2264	50 062 0	INDEX	ITEMP2
0308				07,2265	54 006 0		TS	6
0309	REF	1		07,2266	3 7671 0		CAP	PRI034
0310	REF	10	LAST	223	07,2267	7 1330 1	MASK	MARKSTAT
0311				07,2270	0 0006 1		EXTEND	
0312				07,2271	1 2273 1		BZP	+2
0313	REF	8	LAST	222	07,2272	1 5213 0	TCF	TASKOVER
0314	REF	2	LAST	217	07,2273	3 7667 1	CAP	PRI032
0315	REF	4	LAST	222	07,2274	0 5027 1	TC	NOVAC
0316	REF	11	LAST	223	1330		ERANK=	MARKSTAT
0317	REF	1		07,2275	02421 1		2CADR	MKV50
0317	REF	1		07,2276	16062 1			
0318	REF	9	LAST	223	07,2277	1 5213 0	TCF	TASKOVER

SEE IF MARKS WANTED-REDUCE MARKS WANTED

MARK NOT WANTED-ALARM

SET BIT10 TO ENABLE REJECT

PICK UP MARK SLOT-POINTER
SAVE CURRENT POINTER
INCREMENT POINTER

STORE ADVANCED POINTER

IF ALL MARKS MADE FLASH VB50



L EXCMARK

USER=8 PAGE NO. 9 E7 83

R0319 PROGRAM NAME - MKREJECT
R0320 PROGRAM MODIFIED BY 258/278 PROGRAMMERS
R0321 MOD BY- R. MELANSON TO ADD DOCUMENTATION

DATE- 5 APRIL 1967
LOG SECTION EXCMARK
ASSEMBLY SUNDISK REV. 116

R0322 FUNCTIONAL DESCRIPTION-
R0323 ROUTINE ALLOWS OPERATOR TO REJECT MARK MADE PRIOR TO ACCEPTANCE AND ALLOWS A NEW MARK TO BE MADE BY ASTRONAUT

R0325 CALLING SEQUENCE-
R0326 FROM MARKRUPT IF BIT7 OF CHANNEL 16 IS 1.

R0327 NORMAL EXIT MODE-
R0328 RESUME

R0329 ALARM OR ABORT EXIT MODE-
R0330 ALARM AND RESUME

R0331 OUTPUT-
R0332 1) FOR R21-
R0333 MKRBUF1 SET TO -1
R0334 2) FOR NORMAL MARKING-
R0335 BIT10 MARKSTAT = 0, INCREMENT NO. MARKS BY 1, DECREMENT QPRET BY 7

R0336 ERASABLE INITIALIZATION-
R0337 1) FOR R21-
R0338 BIT14 OF STATE+2 SET TO 1
R0339 2) FOR NORMAL MARKING-
R0340 BIT14 OF STATE+2 SET TO 0, MARKSTAT, QPRET

R0341 DEBRIS-
R0342 1) FOR R21-
R0343 A, MARKSTAT, ERANK
R0344 2) FOR NORMAL MARKING-
R0345 A, MARKSTAT, ITEMP1, QPRET

0346	REP	24	LAST	222	07,2300	3 4675 1	MKREJECT CAP	BIT14
0347	REP	32	LAST	222	07,2301	7 0076 1	MASK	STATE +2
0348					07,2302	0 0006 1	EXTEND	
0349	REP	1			07,2303	1 2307 0	BZF	MKREJECT
0350	REP	7	LAST	218	07,2304	3 7716 0	CA	NEGONE
0351	REP	10	LAST	222	07,2305	55=725 1	TS	MKRBUP1
0352	REP	19	LAST	220	07,2306	0 5222 0	TC	RESUME
0353	REP	12	LAST	223	07,2307	11=330 1	MKREJECT CCS	MARKSTAT
0354	REP	1			07,2310	0 2314 0	TC	REJECT2
0355	REP	15	LAST	222	07,2311	0 5537 0	TC	ALARM
0356					07,2312	00112 0	OCT	112
0357	REP	20	LAST	224	07,2313	0 5222 0	TC	RESUME
0358	REP	17	LAST	223	07,2314	4 4701 1	REJECT2 CS	BIT10
0359	REP	13	LAST	224	07,2315	7 1330 1	MASK	MARKSTAT
0360	REP	14	LAST	224	07,2316	57=330 0	XCH	MARKSTAT

R21 MARK (SPECIAL MARKING FOR R21)

NOT SET THEREFORE REGULAR REJECT
-1 (FOR R22)-0 IN TIME IS FLAG TO R22 SIGNIFYING A
REJECTED MARK
SEE IF MARKS BEING ACCEPTED

MARKS NOT BEING ACCEPTED

SEE IF MARK HAD BEEN MADE SINCE LAST
REJECT, AND SET BIT10 TO ZERO TO
SHOW MARK REJECT



L EXTMARK

USER=3 PAGE NO. 10 E7 S3

0361 REF 16 LAST 224 07,2317 7 4701 1
0362 REF 61 LAST 223 07,2320 10 000 0
0363 REF 1 07,2321 0 2325 1

MASK BIT10
CCS A
TC REJECT3

0364 REF 16 LAST 224 07,2322 0 5537 0
0365 07,2323 00110 1
0366 REF 21 LAST 224 07,2324 0 5222 0

TC ALARM
OCT 110
TC RESUME

DONT ACCEPT TWO REJECTS TOGETHER

0367 REF 2 LAST 223 07,2325 3 4741 1
0368 REF 15 LAST 224 07,2326 7 1330 1
0369 REF 9 LAST 223 07,2327 54 061 1
0370 REF 4 LAST 223 07,2330 4 4716 1
0371 REF 10 LAST 225 07,2331 50 061 0
0372 REF 4 LAST 223 07,2332 26 052 1

REJECT3 CAP LOW9
MASK MARKSTAT
TS ITEMP1
CS SEVEN
INDEX ITEMP1
ADS QPRET

DECREMENT POINTER TO REJECT MARK

0373 REF 13 LAST 222 07,2333 3 4677 0
0374 REF 16 LAST 225 07,2334 6 1330 0
0375 REF 17 LAST 225 07,2335 57 330 0
0376 REF 2 LAST 223 07,2336 7 7671 1
0377 REF 62 LAST 225 07,2337 10 000 0
0378 REF 22 LAST 225 07,2340 0 5222 0
0379 REF 3 LAST 223 07,2341 3 7667 1
0380 REF 5 LAST 223 07,2342 0 5027 1
0381 REF 18 LAST 225 1330
0382 REF 2 LAST 217 07,2343 02346 1
0382 07,2344 16062 1
0383 REF 23 LAST 225 07,2345 0 5222 0

CAP BIT12
AD MARKSTAT
XCH MARKSTAT
MASK PRIO34
CCS A
TC RESUME
CAP PRIO32
TC NOVAC
EBANK= MARKSTAT
ZCADR MKVB51
TC RESUME

NEW POINTER

INCREMENT MARKS WANTED AND IF FIELD
IS NOW NON-ZERO, CHANGE TO VB51 TO
INDICATE MORE MARKS WANTED
INDICATE MORE MARKS WANTED



L SXTMARK

USER'S PAGE NO. 11 E7 83

R0384 PROGRAM DESCRIPTION MKVB51 AND MKVB50.

R0385 AUTHOR-BARNERT DATE-2-15-67 MOD-0

R0386 PURPOSE FLASH V51N70,V51N43, OR V51 TO REQUEST MARKING,
R0387 AND V50N25 R1=16 TO REQUEST TERMINATE MARKING

R0388 CALLING SEQUENCE AS JOB WITHIN SXTMARK

R0389 EXIT TO ENDMARK UPON RECEIPT OF V33, V34 CAUSES GOTOPOCH, ENTER
R0390 RECYCLES THE DISPLAY

R0391 NOTE- SXTMARK AUTOMATICALLY CHANGES FROM CALLING MKVB51 TO MKVB50 WHEN
R0392 SUFFICIENT MARKS HAVE BEEN MADE, AND THE REVERSE WHEN A MARK
R0393 REJECT REDUCES THE NUMBER MADE BELOW THAT REQUIRED

R0394 SUBROUTINES CALLED- BANKCALL, GOMARK2,GOODEND,ENDMARK,WAITLIST

R0395 ALARM OR ABORT MODES - NONE

R0396 ERASABLE USED-VERBREQ,MARKSTAT,OPRET,DSPTM1

R0397 OUTPUT MARKSTAT=VAC ADDRESS

R0398 OPRET- NO.MARKS

0401	REF	7	LAST	199	07,2346	0 4555 0	MKVB51	TC	BANKCALL
0402	REF	1			07,2347	20484 0		CADR	KLEENEX
0403	REF	1			07,2350	3 2426 0		CAF	VB51
0404	REF	6	LAST	226	07,2351	0 4555 0		TC	BANKCALL
0405	REF	1			07,2352	20476 0		CADR	GOMARK4
0406	REF	1			07,2353	1 2356 1		TCF	TERMSKT
0407	REF	1			07,2354	1 2367 0		TCF	ENTANSWR
0408	REF	1			07,2355	1 2415 1		TCF	MKVB5X
0409	REF	2	LAST	199	07,2356	0 5425 1	TERMSKT	TC	CLEARMRK
04095	REF	3	LAST	217	07,2357	0 5253 0		TC	CHECKGM
0410					07,2360	00003 1		MM	03
0411					07,2361	1 2363 1		TCF	+2
0412	REF	1			07,2362	0 2365 0		TC	TERMP03
0414	REF	7	LAST	220	07,2363	0 4574 0		TC	POSTJUMP
04145	REF	1			07,2364	30176 1		CADR	TERM52
04146	REF	2	LAST	199	07,2365	0 5435 0	TERMP03	TC	UPFLAG
04147	REF	1			07,2366	00032 0		ADRES	TRM03PLG
0415	REF	3	LAST	225	07,2367	3 4741 1	ENTANSWR	CAF	LOW9
0416	REF	19	LAST	225	07,2370	7 1330 1		MASK	MARKSTAT
0417	REF	20	LAST	226	07,2371	55+330 1		TS	MARKSTAT
0418					07,2372	4 0000 0		COM	
0419	REF	21	LAST	226	07,2373	51+330 0		INDEX	MARKSTAT
0420	REF	5	LAST	225	07,2374	6 0052 0		AD	OPRET

CLEAR DISPLAY FOR MARK VERB

DISPLAY MARK VB51

VB34-TERMINATE
V33-PROCEED-MARKING DONE
ENTER-RECYCLE TO INITIAL MARK DISPLAY

CLEAR MARK ACTIVITY.

PUT VAC ADR IN MARKSTAT AND NO. OF
MARKS MADE IN OPRET BEFORE LEAVING
SXTMARK



L SCIMARK

USER'S PAGE NO. 12 E7 S3

0421				07,2375	0 0006 1	EXTEND			
0422	REF	1		07,2376	6 2402 0	BZMF	JAMIT		
0423				07,2377	0 0006 1	EXTEND			
0424	REF	14	LAST	225	07,2400	7 4677 1	MP	BIT12	
0425	REF	8	LAST	184	07,2401	6 4712 1	AD	ONE	
0426	REF	22	LAST	226	07,2402	51=330 0	JAMIT	INDEX	MARKSTAT
0427	REF	6	LAST	226	07,2403	54 052 1	TS	OPRET	
0434					07,2404	0 0004 0	INHINT		
0435	REF	4	LAST	196	07,2405	3 4715 0	CAP	FIVE	
0436	REF	8	LAST	184	07,2406	0 5140 1	TC	WAITLIST	
0437	REF	23	LAST	227	1330		EBANK=	MARKSTAT	
0438	REF	1			07,2407	02412 1	ZCADR	ENDMARKS	
0438	REF	1			07,2410	16062 1			
0439	REF	1			07,2411	0 5423 1	TC	ENDMARK	
0440	REF	9	LAST	227	07,2412	3 4712 1	ENDMARKS	CAP	ONE
0441	REF	15	LAST	196	07,2413	0 4633 0	TC	IBNKCALL	
0442	REF	1			07,2414	17467 1	CADR	GOODEND	
0443	REF	3	LAST	225	07,2415	3 7671 0	MKVB5X	CAP	PRI034
0444	REF	24	LAST	227	07,2416	7 1330 1	MARK	MARKSTAT	
0445	REF	63	LAST	225	07,2417	10 000 0	CCS	A	
0446	REF	3	LAST	225	07,2420	1 2346 0	TCF	MKVB51	
0447	REF	1			07,2421	3 4333 0	MKVB50	CAP	R1D1
0448	REF	2	LAST	74	07,2422	55=045 0	TS	DSPTM1	
0449	REF	1			07,2423	3 2425 0	CAP	V50N25	
0450	REF	4	LAST	227	07,2424	1 2351 0	TCF	MKVB51 +3	
0451					07,2425	14431 1	V50N25	VN	5025
0452					07,2426	14600 1	VB51	VN	5100
0454	REF	1			4382		OCT37	=	LOW5

NO MARKS MADE, SHOW IT IN OPRET, R53
WILL PICK IT UP AND RECYCLE
THIS PUTS NUMBER MARKS-1 IN A

STORE NO OF MARKS MADE

SERVICE OPTSTALL INTERFACE WITH

KNOCKS DOWN MARKING FLAG + DOES ENDOPJOB

RE-DISPLAY VB51 IF MORE MARKS WANTED
AND VB50 IF ALL IN

OCT 16

R0455 PROGRAM NAME - MARKIT

DATE- 19 SEPT 1967

R0456 CALLING SEQUENCE

R0457 FROM MARKRUPT IF CHAN 16 BIT 6 = 1

R0458 EXIT

R0459 RESUME

R0460 INPUT

R0461 CDUCHKWD. ALSO ALL INITIALIZATION FOR MARKCONT

R0462 OUTPUT

R0463 MKT2T1,MKCDUX,MKCDUY,MKCDUZ,MKCDUS,MKCDUT

R0464 ALARM EXIT

R0465 NONE

0466	REF	1		07,2427	11=341 1	MARKIT	CCS	CDUCHKWD
0467				07,2430	1 2433 0		TCF	+3

DELAY OF CDUCHKWD CS IF PNZ



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 228

L SXTMARK

USER=3 PAGE NO. 13 E7 S3

0468
0469 REP 20 LAST 216 07,2431 1 2433 0
0470 REP 10 LAST 227 07,2432 3 4714 1
0471 REP 9 LAST 227 07,2433 6 4712 1
0472 REP 11 LAST 224 07,2434 0 5140 1
0473 REP 1 07,1725
0473 REP 1 07,2435 02203 1
0473 REP 1 07,2436 20087 1
0474 REP 24 LAST 225 07,2437 1 5222 1

0475 REP 1 10,2000
0478 10,2203

0477 REP 1

TCP +2
CAP ZERO
AD ONE
TC WAITLIST
EBANK= MRKBUPI
ZCADR MARKDIP

TCP RESUME

SETLOC SXTMARK1
BANK

COUNT 10/SXTMK

10 MS IF NO CHECK

R0478 PROGRAM NAME - MARKDIP

DATE- 19 SEPT 1967

R0479 CALLING SEQUENCE

R0480 WAITLIST FROM MARKIT

R0481 EXIT

R0482 TASKOVER OF IBKCALL TO MARKCONT

R0483 INPUT

R0484 OUTPUT FROM MARKIT, INPUT TO MARKCONT, CDOCHKWD

R0485 OUTPUT

R0486 RUPTSTOR - RUPTSTOR+3, RUPTREG3, RUPTSTOR+5 - RUPTSTOR +6

R0487 ALARM EXIT

R0488 ALARM AND TASKOVER

0489 REP 2 LAST 227 10,2203 3 1341 0 MARKDIP CA CDOCHKWD
0490 10,2204 0 0006 1 EXTEND
0491 REP 1 10,2205 6 2216 0 BZMP MKACPT
0492 REP 25 LAST 196 10,2206 4 4712 0 CS BIT1
0493 REP 1 10,2207 54 354 1 TS MNDX
0494 REP 3 LAST 223 10,2210 3 0383 1 CA MKCDUX
0495 REP 1 10,2211 0 2220 0 TC DIFCHK
0496 REP 3 LAST 223 10,2212 3 0357 0 CA MKCDUY
0497 REP 2 LAST 226 10,2213 0 2220 0 TC DIFCHK
0498 REP 3 LAST 223 10,2214 3 0381 0 CA MKCDUZ
0499 REP 3 LAST 228 10,2215 0 2220 0 TC DIFCHK

0500 REP 16 LAST 227 10,2216 0 4633 0 MKACPT TC IBKCALL
0501 REP 1 10,2217 18152 0 CADR MARKCONT

0503 REP 2 LAST 228 10,2220 24 354 0 DIFCHK INCR MNDX

0504 10,2221 0 0006 1 EXTEND
0505 REP 3 LAST 228 10,2222 5 0354 0 INDEX MNDX

IF DELAY CHECK IS ZERO OR NEG, ACP MARK

SET INDEX -1

SEE IF VEHICLE RATE TOO MUCH AT MARK

MARK DATA OK, WHAT DO WE DO WITH IT

INCREMENT INDEX



L EXMARK

0506	REP	3	LAST	219	10,2223	20 032 1
0507	REP	64	LAST	227	10,2224	10 000 0
0508					10,2225	1 2231 1
0509	REP	23	LAST	219	10,2226	0 0002 0
0510					10,2227	1 2231 1
0511	REP	24	LAST	229	10,2230	0 0002 0
0512	REP	1			10,2231	6 7715 0
0513					10,2232	0 0006 1
0514					10,2233	6 2230 1
0518	REP	17	LAST	225	10,2234	0 6537 0
0519					10,2235	00121 0
0520	REP	10	LAST	223	10,2236	1 5213 0

MSU	CDUX
CCS	A
TCP	+4
TC	0
TCF	+2
TC	0
AD	NEG2
EXTEND	
BZMP	-3
TC	ALARM
OCT	00121
TCP	TASKOVER

GET MARK(ICDU) - CURRENT(ICDU)

SEE IF DIFFERENCE GREATER THAN 3 BITS

NOT GREATER

COUPLED WITH PROGRAM ALARM

DO NOT ACCEPT

USER#8 PAGE NO. 1 E0 S3

VERB-40 IS IN MPAC
 PAN AS BEFORE.

VB40 ZERO (USED WITH NOUN 20 ONLY).
 VB41 COARSE ALIGN (USED WITH NOUN 20 OR
 91 ONLY)
 VB42 FINE ALIGN IMU
 VB43 LOAD IMU ATTITUDE ERROR METERS.
 VB44 SET SURFACE FLAG
 VB45 RESET SURFACE FLAG
 VB46 ESTABLISH G+C CONTROL.
 VB47 MOVE LM STATE VECTOR INTO GM
 VB48 LOAD A/P DATA.
 VB 49 START AUTOMATIC ATTITUDE MANEUVER
 VB50 PLEASE PERFORM
 VB51 PLEASE MARK
 VB52 SET OFFSET NO. FOR P22
 VB 53 PLEASE PERFORM COAS MARK
 V54 START R23 (R21-BACKUP)
 VB55 ALIGN TIME
 VB56 TERMINATE TRACKING (P20 +P25)
 VB57 START R21 RECD TRACK SIGHT MARK ROUT
 VB58 ENABLE AUTOMATIC ATTITUDE MANEUVER
 VB59 PLEASE CALIBRATE
 VB60 SET CPHIX (N17) EQUAL TO CDU
 VB61 SELECT MODE I
 VB62 SELECT MODE II, ERROR WRT N22
 VB63 SELECT MODE III, ERROR WRT N17
 VB64 CALCULATE,DISPLAY S-BAND ANT ANGLES
 V 65 E OPTICAL VERIFICATION FOR PRELAING
 VB 66 ATTACHED. MOVE THIS TO OTHER STATE
 VB67 MATRIX MONITOR
 VB68 CS4 STROKE TEST ON.
 VB 69 CAUSE RESTART
 VB70 UPDATE LIFTOFF TIME.
 VB71 UNIVERSAL UPDATE - BLOCK ADDRESS.
 VB72 UNIVERSAL UPDATE - SINGLE ADDRESS.
 VB73 UPDATE AGC TIME (OCTAL).
 VB74 INITIALIZE DOWN-TELEMETRY PROGRAM
 FOR ERASABLE DUMP.
 VB75 SET LIFTOFF FLAG.



L EXTENDED VERBS

USER'S PAGE NO. 2 E5 84

0047 REF 1 43,2046 0 3013 0
0048 REF 1 43,2047 0 3016 0
0049 REF 1 43,2050 0 2400 1
0050 REF 1 43,2051 0 3004 0
0051 REF 1 43,2052 0 2700 1
0052 REF 1 43,2053 0 2703 1
0053 REF 1 43,2054 0 2546 1
0054 REF 1 43,2055 0 2553 0
0055 REF 1 43,2056 0 2120 0
0056 REF 1 43,2057 0 2565 0
0057 REF 1 43,2060 0 2632 1
0058 REF 1 43,2061 0 3021 1
0059 REF 1 43,2062 0 13025 0
0060 REF 1 43,2063 0 2732 0
0061 REF 1 43,2064 0 3140 1
0062 REF 1 43,2065 0 2751 0
0063 REF 1 43,2066 0 2360 0
0064 REF 1 43,2067 0 2742 1
0065 REF 1 43,2070 0 3124 0
0066 REF 2 LAST 231 43,2071 0 2120 0
0067 REF 1 43,2072 1 3146 0
0068 REF 5 LAST 230 43,2073 0 2275 0
0069 REF 3 LAST 231 43,2074 0 2120 0
0070 REF 6 LAST 231 43,2075 0 2275 0

TC SETPRFLG
TC RESZTPRP
TC CHAZPOGC
TC CALLR35
TC LEAVEC
TC CSWEC
TC V82PERP
TC V83PERP
TC ALM/END
TC V85PERP
TC V86PERP
TC SETVHPLG
TC RESZVHP
TC V89PERP
TC V90PERP
TC GOSHOSUM
TC SYSTEST
TC MATRONG
TC VERB84
TC ALM/END
TC VERB96
TC GOLOADV
TC ALM/END
TC GOLOADV

VB76 SET PREFERRED ATTITUDE FLAG
VB77 RESET PREFERRED ATT. FLAG
CHANGE GYROCOMPASS LAUNCH AZIMUTH V76
VB79 REQ LUNAR LINDMCK SELECTION (R35)
VB80 UPDATE LEM STATE VECTOR
VB81 UPDATE CSM STATE VECTOR
VB82 REQUEST ORBIT PARAM DISPLAY (R30) 0
VB83 RANGE, RANGE RATE, +X AXIS (R31)
VB84 SPARE
VB85 RANGE, RANGE RATE, SLOS 2 22N 9600
VB86 BACKUP MARK REJECT 6 22N 9600
VB87 SET VHP RANGE FLAG
VB88 RESET VHP RANGE FLAG 2 22N 2600
VB89-ALIGN X OR PRF CSM AXIS TO LOS (R69)
VB90-OUT OF PLANE PARAMETERS ER30A
VB91 TEMP FOR HYBRID AND STG. 22N 0600
VB92 OPERATE IMU PERFORMANCE TEST 22N 6800
VB93 CLEAR RENDWFLG
VB94 DO R64
VB95 SPARE
VB96 SET QUITFLAG TO STOP INTEGRATION
VB97 PLEASE/PERFORM ENGINE FAIL (R41)
VB98 SPARE
VB99 PLEASE ENABLE ENGINE

R0071 END OF EXTENDED VERB PAN

0072 REF 7 LAST 222 43,2076 11-044 1
0073 REF 4 LAST 231 43,2077 0 2120 0
00731 REF 2 LAST 186 43,2100 3 0100 0
00732 REF 1 43,2101 7 2123 1
00733 REF 65 LAST 229 43,2102 10 000 0
00734 REF 5 LAST 231 43,2103 0 2120 0

TESTXACT CCS EXTVBACT
TC ALM/END
CA FLAGWRD4
MASK CC24100
CCS A
TC ALM/END

YES. TURN ON OPERATOR ERROR LIGHT
ARE PRIOS USING DSKY

0074 REF 3 LAST 196 43,2104 3 4112 1
0075 REF 6 LAST 231 43,2105 55-044 1
A0076

CAP OCT24
SETXTACT TS EXTVBACT

SET BITS 3 AND 5
NO. SET FLAG TO SHOW EXT VERR DISPLAY
SYSTEM BUSY

0077 REF 25 LAST 229 43,2106 3 0002 0
0078 REF 25 LAST 230 43,2107 54 155 1

CA 0
TS MPAC +1

BLANK EVERYTHING EXCEPT MM AND VERR

0063 REF 3 LAST 222 43,2110 4 4711 0
0064 REF 1 43,2111 0 4170 0
0065 43,2112 0 2113 0
0066 REF 26 LAST 231 43,2113 0 0155 0

CS TWO
TC NVSUB
TC +1
TC MPAC +1

0067 REF 2 LAST 197 43,2114 0 4400 1
0068 REF 1 43,2115 0 5423 1

XACTALM TC FALTON
TC ENDXCT

TURN ON OPERATOR ERROR LIGHT.
RELEASE MARK AND EXT. VERR DISPLAY SYS.

III

L

E5 S4

0089
0090

TURN ON OPERATOR ERROR LIGHT

00955 43,2123 24100 0 0024100 OCT 24100

USER'S PAGE NO. 4 E5 S4

PC096	VBZERO	VERB 40	DESCRIPTION
PC097	ZERO		
PC098		1. REQUIRE NOUN 20 (ICDU ANGLES)	
PC099		2. REQUIRE AVAILABILITY OF EXT VERB DISPLAY SYSTEM	
PC100		3. IF EITHER OF ABOVE CONDITIONS NOT PRESENT, TURN ON OPERATOR ERROR LIGHT AND GO TO PINBRNCH.	
PC102		4. SET EXT VERB DISPLAY ACTIVE FLAG.	
PC103		5. EXECUTE IMUZERO (ZERO IMU CDU ANGLES).	
PC104		6. EXECUTE IMUSTALL (ALLOW TIME FOR DATA TRANSFER).	
PC105		7. RELEASE EXT. VERB DISPLAY SYSTEM.	
0106	REP	1	43,2124 0 2136 1 VBZERO TC OP/INERT
0107	REP	1	43,2125 0 2127 1 TC IMUZEROK
0108	REP	6 LAST 231	43,2128 0 2120 0 TC ALM/END
AC109			
0110	REP	1	43,2127 0 2271 1 IMUZEROK TC CCMODCAD
01101	REP	9 LAST 226	43,2130 0 4555 0 TC BANKCALL
0111	REP	1	43,2131 16516 1 CADR IMUZERO
0112	REP	10 LAST 233	43,2132 0 4555 0 TC BANKCALL
0113	REP	1	43,2133 17516 0 CADR IMUSTALL
0114			43,2134 0 2135 1 TC +1
0115	REP	1	43,2135 0 2121 1 TC GOP IN
0116	REP	4 LAST 231	43,2136 4 4112 0 OP/INERT CS OCT24
0117	REP	2 LAST 166	43,2137 6 1002 1 AD NOUNREQ
0118			43,2140 0 0006 1 EXTEND
0119	REP	1	43,2141 1 2470 1 BZF XACT00
0120	REP	26 LAST 231	43,2142 24 002 0 INCR 0
0121	REP	1	43,2143 6 2147 1 AD OPIMDIFF
0122			43,2144 0 0006 1 EXTEND
0123	REP	2 LAST 233	43,2145 1 2470 1 BZF XACT00
0124	REP	7 LAST 233	43,2146 0 2120 0 TC ALM/END
0125			43,2147 77670 0 OPIMDIFF DEC -71



L EXTENDED VERBS

USER'S PAGE NO. 5 E5 84

P0128 VBCOARK VERB 41 DESCRIPTION
R0127 COURSE ALIGN IMU OR OPTICS
R0128 1. REQUIRE NOUN 20 OR NOUN 91 OR TURN ON OPERATOR ERROR
R0129 2. REQUIRE EXT VERB DISPLAY SYS AVAILAELE OR TURN ON OPERATOR ERROR LIGHT AND GO TO PINBRCH.
R0131 CASE 1 NOUN 20 (ICDU ANGLES)
R0132 3. SET EXT VERB DISPLAY ACTIVE FLAG.
R0133 4. DISPLAY FLASHING V25,N22 (LOAD NEW ICDU ANGLES).
R0134 RESPONSES
R0135 A. TERMINATE
R0136 1. RELEASE EXT VERB DISPLAY SYSTEM
R0137 B. PROCEED
R0138 1. DISPLAY FLASHING V25,N23 (LOAD DELTA ICDU ANGLES).
R0140 RESPONSES
R0141 A. TERMINATE
R0142 1. RELEASE EXT VERB DISPLAY SYSTEM.
R0143 B. PROCEED
R0144 1. EXECUTE ICORK2.
R0145 C. ENTER
R0146 1. INCREMENT CDU ANGLES
R0147 2. EXECUTE ICORK2.
R0148 C. ENTER
R0149 1. EXECUTE ICORK2.
R0150 ICORK2
R0151 1. RE-DISPLAY VERB 41.
R0152 2. EXECUTE IMUCOARS (IMU COARSE ALIGN).
R0153 3. EXECUTE IMUSTALL (ALLOW TIME FOR DATA TRANSFER).
R0154 4. RELEASE EXT VERB DISPLAY SYSTEM.
R0155 CASE 2 NOUN 91 (OCDU ANGLES)
R0156 5. (REQUIRE OPTICS SWITCH TO BE AT COMPUTER OR TURN ON OPERATOR ERROR AND ALARM 115) AND (REQUIRE
R0158 OPTICS AVAILABLE AND DISPLAY FLASHING V24,N92....LOAD NEW OPTICS ANGLES....OR TURN ON ALARM 117
R0160 AND RELEASE EXT VERB DISPLAY SYSTEM).
R0161 6. RESPONSES TO V29,N92.
R0162 A. TERMINATE
R0163 RELEASE EXT VERB DISPLAY SYSTEM
R0164 B. PROCEED OR ENTER
R0165 RE-DISPLAY V41, SET SWITCH TO INDICATE COURSE ALIGN OPTICS WORKING.
R0167 RELEASE EXT VERB DISPLAY SYSTEM.

0166 REF 2 LAST 233 43,2150 0 2136 1 VBCOARK TC OP/INERT
0169 REF 1 43,2151 0 2153 1 TC IMUCOARK RETURN HERE IF NOUN = ICDU(20)
0170 REF 1 43,2152 0 2175 0 TC OPTCOARK RETURN HERE IF NOUN = OCDU(91)
R0171 RETURN TO L+1 IF NOUN 20 - TO L+2 IF NOUN 91.
0172 REF 2 LAST 233 43,2153 0 2271 1 IMUCOARK TC QOXDCAD COARSE ALIGN FROM KEYBOARD
01721 REF 1 43,2154 0 2078 1 TC TESTXACT
0173 REF 1 43,2155 3 2173 0 CAP VNLODCDU CALL FOR THETA LOAD
0174 REF 11 LAST 233 43,2156 0 4555 0 TC BANKCALL
0175 REF 1 43,2157 20465 1 CADR GOXD5PP
0176 REF 1 43,2160 0 5423 1 TC TERXEXTV
0177 43,2161 1 2162 1 TCF +1



L EXTENDED VERBS

USER'S PAGE NO. 6 E5 S4

0178	REP	1		43,2162	3 2174 1	ICORK2	CAP	IMUCOARV
0179	REP	12	LAST	234	43,2163	0 4555 0	TC	BANKCALL
0180	REP	1			43,2164	20746 0	CADR	EXDSPRET
0181	REP	13	LAST	235	43,2165	0 4555 0	TC	BANKCALL
0182	REP	1			43,2166	16602 1	CADR	IMUCOARS
0183	REP	14	LAST	235	43,2167	0 4555 0	TC	BANKCALL
0184	REP	2	LAST	233	43,2170	17516 0	CADR	IMUSTALL
0185	REP	1			43,2171	0 5423 1	TC	ENDEXTVB
0186	REP	2	LAST	235	43,2172	0 5423 1	TC	ENDEXTVB
0187					43,2173	06226 1	VNLODCDU VN	2522
0188					43,2174	12200 0	IMUCOARV VN	4100

RE-DISPLAY COARSE ALIGN VERB.

CALL MODE SWITCHING PROG

STALL



L EXTENDED VERBS

USER=5 PAGE NO. 7 E5 S4

P0189 TEMPORARY ROUTINE TO RUN THE OPTICS CDUS FROM THE KEYBOARD

0190	REP	2	LAST	188	43,2175	3 1323 1	OPTCOARK	CA	OPTCADR	
019001	REP	3	LAST	234	43,2178	0 2272 1		TC	CKMODCAD	+1
019002	REP	2	LAST	234	43,2177	0 2076 1		TC	TESTXACT	
01901	REP	1			43,2200	3 4751 0		CAP	EBANK5	
01902	REP	7	LAST	198	43,2201	54 003 0		TS	EBANK	
0191	REP	7	LAST	162	43,2202	11=314 1		CCS	SWSAMPLE	
0192					43,2203	0 2210 0		TC	+5	SEE IF SWITCH AT COMPUTER
0193					43,2204	0 2205 1		TC	+1	SWITCH AT COMPUTER
0194	REP	4	LAST	232	43,2205	0 4400 1		TC	PALTON	NOT ON COMPUTER
0195	REP	16	LAST	229	43,2206	0 5537 0		TC	ALARM	TURN ON OPERATOR ERR
0196					43,2207	00115 1		OCT	00115	AND ALARM
0197	REP	18	LAST	218	43,2210	11=303 1		CCS	OPTIND	SEE IF OPTICS AVAILABLE
0198	REP	1			43,2211	0 2217 1		TC	OPTC1	IN USE
0199	REP	2	LAST	238	43,2212	0 2217 1		TC	OPTC1	IN USE
0200	REP	3	LAST	238	43,2213	0 2217 1		TC	OPTC1	IN USE
0201	REP	19	LAST	236	43,2214	0 5537 0		TC	ALARM	OPTICS RESERVED (OPTIND=-0)
0202					43,2215	00117 0		OCT	00117	
0203	REP	4	LAST	232	43,2218	0 5423 1		TC	ENDEXT	
0204	REP	1			43,2217	3 2237 0	OPTC1	CAP	VNLD0CDU	VERB-NOUN TO LOAD OPTICS CDUS
0205	REP	15	LAST	235	43,2220	0 4555 0		TC	BANKCALL	
0206	REP	2	LAST	234	43,2221	20465 1		CADR	GQXDSPP	
0207	REP	2	LAST	234	43,2222	0 5423 1		TC	TERMEXTV	
0208					43,2223	0 2224 1		TC	+1	PROCEED
02062	REP	2	LAST	93	43,2224	3 1773 0		CA	SAC	
02084	REP	3	LAST	183	43,2225	55=181 1		TS	DESOPTS	
02086	REP	2	LAST	93	43,2226	3 1775 0		CA	PAC	
02066	REP	4	LAST	164	43,2227	55=160 0		TS	DESOPPT	
0209	REP	1			43,2230	3 2174 1		CAP	OPTCOARV	RE-DISPLAY OUR OWN VERB
0210	REP	16	LAST	236	43,2231	0 4555 0		TC	BANKCALL	
0211	REP	2	LAST	235	43,2232	20746 0		CADR	EXDSPRET	
0212	REP	11	LAST	226	43,2233	3 4712 1		CAP	ONE	
0213	REP	19	LAST	236	43,2234	55=303 1		TS	OPTIND	SET COARS WORKING
0214	REP	3	LAST	235	43,2235	0 5423 1		TC	ENDEXTVB	
0215	REP	4	LAST	236	43,2236	0 5423 1		TC	ENDEXTVB	
0216					43,2237	06134 1	VNLD0CDU	VN	2492	
0217	REP	2	LAST	235	43,2174		OPTCOARV	EQUALS	IMUCOARV	DIFFERENT NOUNS.

USER'S PAGE NO. 8 E5 S4

ADDRESS	OPERATION	DATA	DESCRIPTION
P0218	IMUPINEK	VERB 42	DESCRIPTION
R0219	PINE ALIGN IMU		
R0220	1. REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG OR TURN ON OPER ERROR AND GO TO PINBENCH.		
R0222	2. DISPLAY FLASHING V25,N93....LOAD DELTA GYRO ANGLES....		
R0223	RESPONSES		
R0224	A. TERMINATE		
R0225	1. RELEASE EXT VERB DISPLAY SYSTEM.		
R0226	B. PROCEED OR ENTER		
R0227	1. RE-DISPLAY VERB 42		
R0228	2. EXECUTE IMUPINE (IMU FIVE ALIGN MODE SWITCHING).		
R0229	3. EXECUTE IMUSTALL (ALLOW FOR DATA TRANSFER)		
R0230	A. FAILED		
R0231	1. RELEASE EXT VERB DISPLAY SYSTEM.		
R0232	B. GOOD		
R0233	1. EXECUTE IMPULSE (TORQUE IRIGS).		
R0234	2. EXECUTE IMUSTALL AND RELEASE EXT VERB DISPLAY SYSTEM.		
0236	REF 4 LAST 236	43,2240 0 2271 1	IMUPINEK TC QMODCAD FINE ALIGN WITH GYRO TORQUING
02361	REF 3 LAST 236	43,2241 0 2076 1	TC TESTXACT
0237	REF 1	43,2242 3 2287 0	CAP VNLODGYR CALL FOR LOAD OF GYRO COMMANDS
0238	REF 17 LAST 236	43,2243 0 4555 0	TC BANKCALL
0239	REF 3 LAST 236	43,2244 20465 1	CADR GQXDSPP
0240	REF 3 LAST 236	43,2245 0 5423 1	TC TERMEXTV
0241		43,2246 0 2247 1	TC +1 PROCEED WITHOUT A LOAD
0242	REF 1	43,2247 3 2270 0	CAP IMUPINEV RE-DISPLAY OUR OWN VERB
0243	REF 16 LAST 237	43,2250 0 4555 0	TC BANKCALL
0244	REF 3 LAST 236	43,2251 20746 0	CADR EXDSPRET
0245	REF 19 LAST 237	43,2252 0 4555 0	TC BANKCALL CALL MODE SWITCH PROG
0246	REF 1	43,2253 17012 1	CADR IMUPINE
0247	REF 20 LAST 237	43,2254 0 4555 0	TC BANKCALL HIBERNATION
0248	REF 3 LAST 235	43,2255 17516 0	CADR IMUSTALL
0249	REF 5 LAST 236	43,2256 0 5423 1	TC ENDEXTVB
0250	REF 1	43,2257 3 2266 1	FINEK2 CAP LGYROBIN PINBALL LEFT COMMANDS IN OGC REGISTERS
0251	REF 21 LAST 237	43,2260 0 4555 0	TC BANKCALL
0252	REF 1	43,2261 17125 1	CADR IMPULSE
0253	REF 22 LAST 237	43,2262 0 4555 0	TC BANKCALL
0254	REF 4 LAST 237	43,2263 17516 0	CADR IMUSTALL
0255	REF 6 LAST 237	43,2264 0 5423 1	TC ENDEXTVB
0256	REF 7 LAST 237	43,2265 0 5423 1	TC ENDEXTVB
0257	REF 5 LAST 230	43,2266 02757 0	LGYROBIN ECADR OGC
0258		43,2267 06335 1	VNLODGYR VN 2593
0259		43,2270 12400 0	IMUPINEV VN 4200 FINE ALIGN VERB
02591	REF 4 LAST 79	43,2271 3 1322 0	QMODCAD CA MODECADR



L EXTENDED VERBS

USER-S PAGE NO. 9 E5 S4

02592 43,2272 0 0006 1 EXTEND
02593 REF 2 LAST 181 43,2273 1 8711 1 BZF TCQ
02594 REF 8 LAST 233 43,2274 0 2120 0 TC ALM/END
R0260 GOLOADLV VERB 50 DESCRIPTION
R0261 AND OTHER PLEASE
R0262 DO SOMETHING VERBS
R0263 PLEASE PERFORM, MARK, CALIBRATE, ETC.
R0264 1. PRESSING ENTER ON DSKY INDICATES REQUESTED ACTION HAS BEEN PERFORMED, AND THE PROGRAM DOES THE
R0265 SAME RECALL AS A COMPLETED LOAD.
R0267 2. THE EXECUTION OF A VERB 33 (PROCEED WITHOUT DATA) INDICATES THE REQUESTED ACTION IS NOT DESIRED.
SOMEBODY IS USING MODECADR SO EXIT

0269 REF 1 43,2275 0 4447 1 GOLOADLV TC FLASHOFF
0270 REF 1 43,2278 3 4215 0 CAP PINSUPBT
0271 43,2277 0 0008 1 EXTEND
0272 REF 2 LAST 182 43,2300 01 007 1 WRITE SUPERBNK TURN ON FE7
0273 REF 9 LAST 232 43,2301 0 4574 0 TC POSTJUMP
0274 REF 1 40,2000 SEANK= PINSUPER
0275 REF 1 43,2302 62001 1 CADR LOADLV1
R0278 V60 VERB 60

0277 43,2303 0 0008 1 V60 EXTEND
0278 REF 4 LAST 229 43,2304 3 0033 1 DCA CDUX
0279 REF 1 43,2305 53-334 0 DXCH CPHIX
0280 REF 4 LAST 219 43,2306 3 0034 0 CA CDUZ
0281 REF 2 LAST 238 43,2307 55-335 1 TS CPHIX +2
0282 REF 2 LAST 233 43,2310 0 2121 1 TC GOPIN
R0283 V81 VERB 81

0284 REF 5 LAST 197 43,2311 0 5447 0 V81 TC DOWNFLAG
0285 REF 1 43,2312 00008 1 ADRES NEEDLFLG
0286 REF 3 LAST 238 43,2313 0 2121 1 TC GOPIN
R0287 V62 VERB 62
SET NEEDLFLG TO 0 (FLAGWRD0,BIT9), PHASE
PLANE A/P FOLLOWING ERROR DISPLAYED

0288 REF 3 LAST 226 43,2314 0 5435 0 V62 TC UPFLAG
0289 REF 2 LAST 238 43,2315 00006 1 ADRES NEEDLFLG
SET NEEDLFLG TO 1 (FLAGWRD0,BIT9),
TOTAL ATTITUDE ERROR DISPLAYED

0290 REF 4 LAST 238 43,2316 0 5435 0 TC UPFLAG
02902 REF 1 43,2317 00220 1 ADRES N22ORN17
02904 REF 4 LAST 238 43,2320 0 2121 1 TC GOPIN
SET N22ORN17 TO 1 (FLAGWRD9,BIT8),
COMPUTE TOTAL ATTITUDE ERROR WRT N22

R02905 V83 VERB 83

02906 REF 5 LAST 238 43,2321 0 5435 0 V83 TC UPFLAG
02907 REF 3 LAST 238 43,2322 00006 1 ADRES NEEDLFLG
SET NEEDLFLG TO 1 (FLAGWRD0,BIT9),
TOTAL ATTITUDE ERROR DISPLAYED

02908 REF 8 LAST 238 43,2323 0 5447 0 TC DOWNFLAG
SET N22ORN17 TO 0 (FLAGWRD9,BIT6),



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 239

L EXTENDED VERBS

USER-S PAGE NO: 10 E5 S4

02909 REF 2 LAST 238 43,2324 00220 1
029093 REF 5 LAST 238 43,2325 0 2121 1

ADRES N22ORN17
TC GGPIN

COMPUTE TOTAL ASTRONAUT ATTITUDE ERROR



L EXTENDED VERBS

USER-S PAGE NO. 11 E5 84

P0291	ALINTIME	VERB 55	DESCRIPTION
R0292	1. SET EXT VERB DISPLAY BUSY FLAG.		
R0293	2. DISPLAY FLASHING V25,N24 (LOAD DELTA TIME FOR AGC CLOCK.		
R0294	3. REQUIRE EXECUTION OF VERB 23.		
R0295	4. ADD DELTA TIME, RECEIVED FROM INPUT REGISTER, TO THE COMPUTER TIME.		
R0297	5. RELEASE EXT VERB DISPLAY SYSTEM		

0298	REP	1	COUNT	04/R33
0299	REF	4	LAST 237	43,2326 0 2076 1 ALINTIME TC TESTDACT
0300	REF	1		43,2327 3 2357 1 CAP VNLODOT
0301	REF	23	LAST 237	43,2330 0 4555 0 TC BANKCALL
0302	REF	1		43,2331 20465 1 CADR GOMARKP
0303	REF	5	LAST 236	43,2332 0 5423 1 TC ENDEXT
0304	REF	6	LAST 240	43,2333 0 5423 1 TC ENDEXT
0305	REF	1		43,2334 4 2356 1 CS DEC23
0306	REF	27	LAST 231	43,2335 6 0154 1 AD MPAC
0307				43,2336 0 0006 1 EXTEND
0308	REF	1		43,2337 1 2341 1 RZF UPDATIME
0309	REF	7	LAST 240	43,2340 0 5423 1 TC ENDEXT
0310				43,2341 0 0004 0 UPDATIME INHINT
0311	REF	22	LAST 232	43,2342 3 4714 1 CAP ZERO
0312	REF	26	LAST 240	43,2343 54 156 1 TS MPAC +2
0313	REF	19	LAST 217	43,2344 54 001 1 TS L
0314	REF	7	LAST 219	43,2345 52 025 1 DXCH TIME2
0315	REF	29	LAST 240	43,2346 52 155 1 DXCH MPAC
0316	REF	2	LAST 74	43,2347 53*052 0 DXCH DSPTM2 +1
0317	REF	30	LAST 240	43,2350 20 155 1 DAS MPAC
0318	REF	1		43,2351 0 7228 0 TC TPAGREE
0319	REF	31	LAST 240	43,2352 52 155 1 DXCH MPAC
0320	REF	6	LAST 240	43,2353 20 025 1 DAS TIME2
0321				43,2354 0 0003 1 RELINT
0322	REF	6	LAST 240	43,2355 0 5423 1 UPDTMEND TC ENDEXT
0323				43,2356 00027 1 DEC23 DEC 23
0324				43,2357 06230 0 VNLODOT VN 2524

TERMINATE
PROCEED
DATA IN OR RESEQUENCE(UNLIKELY)
RECALL LEFT VERB IN MPAC
GO AHEAD WITH UPDATE ONLY IF RECALL
WITH V23 (DATA IN).
DELTA TIME IS IN DSPTM1, +1.
NEEDED FOR TP AGREE
ZERO T1 d 2 WHILE ALIGNING.
INCREMENT
FORCE SIGN AGREEMENT.
NEW CLOCK.
V 23
V25N24 FOR LOAD DELTA TIME

L EXTENDED VERBS

USER=8 PAGE NO. 12

E5 S4

R0325					SYSTEST	VERB 92		DESCRIPTION	
R0326					OPERATE SELECTED SYSTEM TEST				
R0327					1. REQUIRE POO OR POO- OR TURN ON OPERATOR ERROR.				
R0328					2. TURN OFF DAP IF IT IS ON.				
R0329					3. DISPLAY FLASHING V21,N01 (LOAD TEST NUMBER 1 THRU 17).				
R0330					4. UPON ENTRY OF TEST NUMBER, SCHEDULE TSELECT WITH PRIORITY 20.				
R0332					TSELECT				
R0333					1. IF LOADED TEST NUMBER IS VALID, GO TO THAT TEST ROUTINE, OTHERWISE TURN ON OPERATOR ERROR AND				
R0335					REPEAT LOAD REQUEST DISPLAY. (NO. 3 ABOVE)				
0336	REF	2	LAST	202	E5,1425			EBANK=	OPLACE
0337	REF	1						COUNT	04/EXTVB
0338	REF	1			43,2360	0 2715 0	SYSTEST	TC	CHKPOOH
0339	REF	1			43,2361	0 2721 1		TC	EXDAPOFF
0340	REF	1			43,2362	3 4675 1		CAP	PRI020
0342	REF	2	LAST	179	43,2363	0 5042 1		TC	PINDVAC
0343	REF	3	LAST	241	E5,1425			EBANK=	OPLACE
0344	REF	1			30,2000			SBANK=	IMUSUPER
0345	REF	1			43,2364	02002 1		2CADR	REDO
0345	REF	1			43,2365	66065 1			
0346	REF	6	LAST	239	43,2366	0 2121 1		TC	GOPIN
R0347	REDO AND TSELECT ARE NOW IN SYSTEM TEST.								
0348	REF	2	LAST	230 TO 240	214 214*			COUNT*	55/EXTVB
R0349					CKOPTVB	VERB 65		DESCRIPTION	
R0350	OPTICAL VERIFICATION FOR PRELAUNCH.								
R0351	1. SCHEDULE GCOMPVER, OPTICAL VERIFICATION SUBPROGRAM, WITH PRIORITY 17.								
0353	REF	4	LAST	228	43,2367	0 5253 0	CKOPTVB	TC	CHECKMM
0354					43,2370	00002 0		MM	02
0355	REF	9	LAST	238	43,2371	0 2120 0		TC	ALM/END
0356					43,2372	0 0004 0		INHINT	
0357	REF	3	LAST	169	43,2373	3 4763 1		CAP	PRI016
0358	REF	3	LAST	241	43,2374	0 5042 1		TC	PINDVAC
0359	REF	4	LAST	241	E5,1425			EBANK=	OPLACE
0360	REF	2	LAST	209	43,2375	02000 0		2CADR	COMPVER
0360					43,2376	66065 1			
0361	REF	7	LAST	241	43,2377	0 2121 1		TC	GOPIN
R0362	V 76....				TO CHANGE GYROCOMPASS AZIMUTH				
0363	REF	5	LAST	241	43,2400	0 5253 0	CHAZPOGC	TC	CHECKMM
03631					43,2401	00002 0		MM	02
03632	REF	10	LAST	241	43,2402	0 2120 0		TC	ALM/END

I WONDER IF PRELAUNCH IS RUNNING
NOT RUNNING OPERATOR ERROR

PRELAUNCH OPTICAL VERIFICATION

STANDARD LEADIN TO GCOMPVER.

IS IT PRELAUNCH

NO - OPERA TOR ERROR



L EXTENDED VERBS

USER=8 PAGE NO. 13 E5 84

0364 REP 4 LAST 241 43,2403 3 4763 1
0365 REP 4 LAST 241 43,2404 0 5042 1
0366 REP 14 LAST 212 E5,1871
0367 REP 2 LAST 209 43,2405 03738 0
0367 43,2406 66085 1
0368 REP 3 LAST 195 43,2407 0 5301 0
0369 43,2410 00174 0
0370 REP 8 LAST 241 43,2411 0 2121 1

CAP PRIO16
TC FINDVAC
EBANK= XSM
ZCADR AZMTHCG1
TC PHASCHNG
OCT 00174
TC GOPIN

PRELAUNCH AZIMUTH CHANGE



L EXTENDED VERBS

USER'S PAGE NO. 14 E5 S4

PO371	IMUATTCK	VERB 43	DESCRIPTION
R0372			LOAD IMU ATTITUDE ERROR METERS
R0373			1. REQUIRE PROGRAM 00 ACTIVE, COARSE ALIGN ENABLE BIT OFF AND ZERO ICDU BIT OFF.
R0375			2. IF QUID REF RELEASE OR LIPTOFF HAS OCCURRED REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG, OTHERWISE ALLOW CURRENT EXT VERB DISPLAY TO BE OVER-RIDDEN.
R0377			3. REMOVE COARSE ALIGN ENABLE AND IMU ERROR COUNTER ENABLE
R0379			4. DISPLAY FLASHING V25,N22 (LOAD NEW ICDU ANGLES).
R0380			5. UPON PROCEED OR ENTER RESPONSE, INITIALIZE CURRENT DAC AND COMMAND VALUES, ENABLE ERROR COUNTERS
R0381			TRANSFER LOADED VALUES TO REGISTERS, AND SEND COMMANDS.
R0383			6. IF BUSY FLAG SET, RESET IT TO RELEASE EXT VERB DISPLAY.
R0384			
0385	REF	2 LAST 241	43,2412 0 2715 0 IMUATTCK TC QKPOOH.
0386	REF	1	43,2413 3 2471 1 CA OCTAL30 CHECK IF IMU ZERO AND IMU COARSE ARE ON
0387			43,2414 0 0008 1 EXTEND
0388	REF	21 LAST 218	43,2415 02 012 0 RAND CHAN12
0389	REF	68 LAST 231	43,2418 10 000 0 CCS A
0390	REF	11 LAST 241	43,2417 1 2120 1 TCP ALM/END NOT ALLOWED IF IMU COARSE OR IMU ZERO ON
0391	REF	1	43,2420 0 2457 0 TC QKLFIBTS IS IT BEFORE OR AFTER LIPTOFF
0392	REF	5 LAST 240	43,2421 0 2078 1 TC TESTXACT AFTER
0393	REF	1	43,2422 4 4728 1 CS OCT50 REMOVE COARSE AND ECTR ENABLE.
0394			43,2423 0 0008 1 EXTEND
0395	REF	22 LAST 243	43,2424 03 012 1 WAND CHAN12
0398	REF	2 LAST 234	43,2425 3 2173 0 CAP VNLODCDU
0397	REF	24 LAST 240	43,2428 0 4555 0 TC BANKCALL
0398	REF	4 LAST 237	43,2427 20485 1 CADR GOXDSPP
0399	REF	1	43,2430 1 2444 0 TCP TRMATTC
0400			43,2431 0 2432 0 TC +1
0401	REF	4 LAST 198	43,2432 3 4752 0 CAP EBANK8
0402	REF	8 LAST 238	43,2433 54 003 0 TS EBANK SET E6 FOR NEEDLES.
0403	REF	5 LAST 212	E6,1476 EBANK= AK
0404	REF	25 LAST 243	43,2434 0 4555 0 TC BANKCALL INITIALIZE CURRENT DAC AND
0405	REF	1	43,2435 42427 0 CADR NEEDLE11 COMMAND VALUES
0408	REF	28 LAST 243	43,2436 0 4555 0 TC BANKCALL ENABLE ERROR COUNTERS.
0407	REF	1	43,2437 42448 1 CADR NEEDLER2
0408	REF	4 LAST 231	43,2440 3 4711 1 CAP TWO 4 MS MIN.
0410	REF	10 LAST 228	43,2441 0 5140 1 TC WAITLIST
0411	REF	6 LAST 243	E6,1478 EBANK= AK
0412	REF	1	43,2442 02447 1 ZCADR ATTCK1
0412	REF	1	43,2443 88108 0
0413	REF	2 LAST 243	43,2444 0 2457 0 TRMATTC TC QKLFIBTS IS IT BEFORE OR AFTER LIPTOFF
0414	REF	9 LAST 240	43,2445 1 5423 0 TCP ENDEXT AFTER
0415	REF	9 LAST 242	43,2446 0 2121 1 TC GOPIN

L EXTENDED VERBS

USER=3 PAGE NO. 15 E6 S4

0416				43,2447	0 0008 1	ATTCK1	EXTEND		TRANSFER LOADED VALUES TO DESIRED REGS.
0417	REP	5	LAST	77	43,2450	3 1158 1	DCA	THETAD	
0418	REP	7	LAST	243	43,2451	53=477 0	DXCH	AK	
0419	REP	6	LAST	244	43,2452	31=157 0	CAE	THETAD +2	
0420	REP	6	LAST	244	43,2453	55=500 1	TS	AK +2	
0421	REP	17	LAST	226	43,2454	0 4833 0	TC	IBNKCALL	SENDS COMMANDS LIMITED TO +,- 364 PULSES
0422	REP	1			43,2455	42482 1	CADR	NEEDLES	AND LEAVES ERROR COUNTERS ENABLED.
0423	REP	11	LAST	229	43,2456	0 5213 1	TC	TASKOVER	
0424	REP	12	LAST	156	43,2457	3 4708 1	CKLPTBTS	CAP BITS	HAS LIFTOFF OCCURRED
0425	REP	3	LAST	183	43,2460	7 0101 0	MASK	FLAGWRDS	
0426	REP	67	LAST	243	43,2461	10 000 0	CCS	A	
0427	REP	27	LAST	233	43,2462	0 0002 0	TC	O	YES
0428	REP	13	LAST	244	43,2463	3 4708 1	CAP	BITS	
0429					43,2464	0 0008 1	EXTEND		
0430	REP	4	LAST	161	43,2465	02 030 0	RAND	CHAN30	
0431	REP	66	LAST	244	43,2466	10 000 0	CCS	A	
0432	REP	2	LAST	131	43,2467	1 8708 1	TCF	Q+1	
0433	REP	26	LAST	244	43,2470	0 0002 0	XACT00	TC O	YES
0434					43,2471	00030 1	OCTAL30	OCT 30	
0435	REP	3	LAST	243	43,2472	0 2715 0	VB64	TC CHKPOOH	DEMAND PROGRAM 00.
0436	REP	6	LAST	243	43,2473	0 2078 1	TC	TESTXACT	IF DISPLAY SYS. NOT BUSY,MAKE IT BUSY.
0437					43,2474	0 0004 0	INHINT		
0438	REP	1			43,2475	3 4877 0	CAP	PRI04	
0439	REP	5	LAST	242	43,2476	0 5042 1	TC	FINDVAC	
0440	REP	2	LAST	68	E4,1720		EBANK=	RHO5B	
0441	REP	1			43,2477	03585 1	2CADR	SBANDANT	CALC.,DISPLAY S-BAND ANTENNA ANGLES.
0441	REP	1			43,2500	64104 0			
0442	REP	3	LAST	198	43,2501	0 5112 0	TC	ENDOFJOB	

R0443 ENATMA VERB 58 DESCRIPTION
 R0444 ENABLE AUTOMATIC ATTITUDE MANEUVER

R0445 VERB58 RESETS STIKFLAG TO ENABLE R61 TO PERFORM AUTOMATIC TRACKING MANEUVERS, AFTER INTERRUPTIONS BY RHC ACT-
 R0447 IVITY.

0446	REP	7	LAST	236	43,2502	0 5447 0	ENATMA	TC	DOWNFLAG	RESET STIKFLAG.
0449	REP	2	LAST	195	43,2503	00020 0		ADRES	STIKFLAG	BIT 14 FLAG 1
0450	REP	10	LAST	243	43,2504	0 2121 1		TC	GOPIN	

R0451 STROKON VERB 66 DESCRIPTION
 R0452 STROKE TEST SETUP/ENABLE
 R0453 1. SET EXT VERB DISPLAY BUSY FLAG
 R0454 2. SCHEDULE STIKTST1 WITH PRIORITY 30.
 R0455 3. RELEASE EXT VERB DISPLAY.

L EXTENDED VERBS

USER-S PAGE NO. 16 E6 S4

0456	REF	2	LAST	102	E6,1635		EBANK=	TSTVCDT	
0457	REF	5	LAST	193	43,2505	4 0102 0	STROKON	CS	FLAGWRD6
0458	REF	4	LAST	193	43,2506	7 4105 0		MASK	OCT80000
0459					43,2507	0 0006 1		EXTEND	
0460	REF	12	LAST	243	43,2510	6 2120 0		BZMP	ALM/END
0461	REF	4	LAST	193	43,2511	3 4371 0		CAP	PRI030
0463	REF	6	LAST	225	43,2512	0 5027 1		TC	NOVAC
0464	REF	2	LAST	102	E6,1614			EBANK=	STROKER
0465	REF	1			43,2513	03446 1		2CADR	STRECTSTI
0465	REF	1			43,2514	40106 1			
0466	REF	11	LAST	244	43,2515	0 2121 1		TC	GOPIN
R0467					STABLISH	VERB 46		DESCRIPTION	
R0468					ESTABLISH G AND N CONTROL				
R0469					1. IF TVC DAP IS ON, ALARM AND RETURN OTHERWISE REQUIRE EXT VERB DISPLAY SYSTEM				
R0471					AVAILABLE, SET BUSY FLAG AND GO TO DAPFIG TO DETERMINE VEHICLE CONFIGURATION.				
0473	REF	6	LAST	245	43,2516	4 0102 0	STABLISH	CS	FLAGWRD6
0474	REF	5	LAST	245	43,2517	7 4105 0		MASK	OCT80000
0475					43,2520	0 0006 1		EXTEND	
0476					43,2521	6 2523 1		BZMP	+2
0477	REF	13	LAST	245	43,2522	0 2120 0		TC	ALM/END
0478	REF	5	LAST	243	43,2523	3 4752 0		CAP	EBANK6
0479	REF	9	LAST	243	43,2524	54 003 0		TS	EBANK
0480	REF	10	LAST	238	43,2525	0 4574 0		TC	POSTJUMP
0481	REF	1			43,2526	65521 1		CADR	DAPFIG

V66 PERMITTED ONLY DURING TVC

NOT TVC....FLASH OF ERROR LIGHT
JOB REQUEST, TO SET UP STROKE TEST,
INCLUDING INITIALIZATIONS

VB 46
NOT PERMITTED WHEN TVC DAP IS ON.

SET EBANK TO E6



L EXTENDED VERBS

USER=5 PAGE NO. 17 Pg 54

R0482 CREWMANU VERB 49 DESCRIPTION
 R0483 START AUTOMATIC ATTITUDE MANEUVER
 R0484 1. REQUIRE PROGRAM 00 ACTIVE.
 R0485 2. SET EXT VERB DISPLAY BUSY FLAG.
 R0486 3. SCHEDULE R82DISP WITH PRIORITY 10.
 R0467 4. RELEASE EXT VERB DISPLAY.

R0488 R82DISP
 R0489 1. DISPLAY FLASHING V08,N22 (DECIMAL DISPLAY NEW ICU ANGLES). UPON IMMEDIATE RETURN, SET-UP GROUP
 R0491 4 FOR RESTART OF DISPLAY SEQUENCE.
 R0492 RESPONSES
 R0493 A. TERMINATE
 R0494 1. GO TO GOTOPOCH.
 R0495 B. PROCEED
 R0498 1. SET 3AXISFLG TO INDICATE MANEUVER IS SPECIFIED BY 3 AXIS.
 R0498 2. EXECUTE R80CSM (ATTITUDE MANEUVER).
 R0499 3. ZERO GROUP 4 (END R82).
 R0500 C. ENTER
 R0501 1. REPEAT FLASHING V08,N22.

0502	REP	4	LAST	244	43,2527	0 2715 0	CREWMANU TC	CHKPOCH	DEMAND POO
0503	REP	7	LAST	244	43,2530	0 2076 1	TC	TESTXACT	
05031	REP	1			43,2531	3 4676 1	CAP	PRI010	
05032	REP	6	LAST	244	43,2532	0 5042 1	TC	FINDVAC	
0504	REP	1			1155		EBANK=	CPH1	
0505	REP	1			43,2533	02330 0	2CADR	R82DISP	
0505	REP	1			43,2534	58102 1			
0506	REP	4	LAST	244	43,2535	0 5112 0	TC	ENDOFJOB	

E6 S4

POS13	DAPDISP	VERB 48	DESCRIPTION
R0514			LOAD AUTOPILOT DATA (ROUTINE R03)
R0515			0. CHECKFAIL AND RETURN IF TVC.
R0516			1. REQUIRE EXT VERB DISPLAY AVAILABLE AND SET BUSY FLAG.
R0517			2. LOWER PRIORITY TO 10.
R0518			3. DISPLAY FLASHING V04,N46 (DISPLAY AUTOPILOT CONFIGURATION)
R0520			4. UPON PROCEED RESPONSE, EXECUTE S41.2.
R0521			5. DISPLAY FLASHING V06,N47 (DISPLAY CSM WGT., LEM WGT.)
R0522			6. UPON PROCEED RESPONSE EXECUTE S40.14.
R0523			7. DISPLAY FLASHING V06,N48 (DISPLAY PITCH TRIM, YAW TRIM)
R0525			8. UPON PROCEED RESPONSE, RELEASE EXTENDED VERB DISPLAY SYSTEM
0527	REP	3 LAST 241 TO 247	103 317* COUNT* 33/EXTVB
0528	REP	7 LAST 245	43,2536 4 0102 0 DAPDISP CS FLAGWRD6
0529	REP	6 LAST 245	43,2537 7 4105 0 MASK OCT80000
0530			43,2540 0 0006 1 EXTEND
0531			43,2541 6 2543 1 BZMF +2 TVC = 10, CS YIELDS 01, BZMF TO CONTINUE
0532	REP	14 LAST 245	43,2542 0 2120 0 TC ALM/END RETURN IF TVC
0533	REP	8 LAST 246	43,2543 0 2076 1 TC TESTXACT
05331	REP	27 LAST 243	43,2544 0 4555 0 TC BANKCALL
05332	REP	1	43,2545 64000 0 CADR DAPDISP1
0536			42,2000 BANK 42
0537	REP	1	42,2000 SETLOC EXTVB5
0538			42,2000 BANK
0539	REP	1	COUNT 24/R03
0540	REP	6 LAST 245	42,2000 3 4752 0 DAPDISP1 CAP EBANK6
0541	REP	10 LAST 245	42,2001 54 003 0 TS EBANK
05415	REP	2 LAST 246	42,2002 3 4676 1 CAP PRIO10
05416	REP	1	42,2003 0 5103 0 TC PRIOCHNG
0542	REP	1	42,2004 3 2061 1 DONQUN46 CAP V04N46 R1 R2
0543	REP	28 LAST 247	42,2005 0 4555 0 TC BANKCALL DAPDATR1 DAPDATR2
0544	REP	5 LAST 243	42,2006 20465 1 CADR GOXDSPF GOXDSP ROUTINES USED FOR EXTENDED VERBS.
0545	REP	10 LAST 243	42,2007 0 5423 1 TC ENDEXT EXT. VBS GO TO ENDEXT, NOT ENDOFJOB.
0546			42,2010 0 2012 0 TC +2
0547	REP	1	42,2011 0 2004 1 TC DONQUN46
05471	REP	11 LAST 210	42,2012 3 1466 1 CA DAPDATR1
05472	REP	17 LAST 198	42,2013 7 4707 1 MASK BIT4
05473	REP	69 LAST 244	42,2014 10 000 0 CCS A
05474	REP	1	42,2015 1 2054 0 TCP MAXIN
05475	REP	8 LAST 244	42,2016 0 5447 0 TC DOWNFLAG
05476	REP	1	42,2017 00212 0 ADRES MAXDBFLG
0548	REP	29 LAST 247	42,2020 0 4555 0 MAXOUT TC BANKCALL
0549	REP	1	42,2021 40146 0 CADR S41.2
0550	REP	1	42,2022 3 2060 0 DONQUN47 CAP V06N47 R1 R2 R3



L EXTENDED VERBS

USER'S PAGE NO. 19 E6 84

0551	REF	30	LAST	247	42,2023	0 4555 0	TC	BANKCALL	CSM WGT.	LEM WGT.	BLANK
0552	REF	6	LAST	247	42,2024	20465 1	CADR	GOXDSPP			
0553	REF	11	LAST	247	42,2025	0 5423 1	TC	ENDEXT			
0554					42,2026	0 2030 0	TC	+2			
0555	REF	1			42,2027	0 2022 0	TC	DONQUN47			
055501	REF	12	LAST	247	42,2030	31-466 1	CAB	DAPDATR1	DO MASS PROPERTIES CALCULATION ONLY IF CONFIG = 1(CSM), 2(CSM/LM), 6(CSM/LMA)		
055502	REF	5	LAST	245	42,2031	7 4371 1	MASK	PRIO30			
055503					42,2032	0 0006 1	EXTEND				
055504	REF	1			42,2033	1 2046 0	BZF	DONQUN46	SKIP IF 0, 4		
055505					42,2034	4 0000 0	COM				
055506	REF	6	LAST	248	42,2035	7 4371 1	MASK	PRIO30			
055507					42,2036	0 0006 1	EXTEND				
055508	REF	2	LAST	248	42,2037	1 2046 0	BZF	DONQUN48	SKIP IF 3, 7		
055509					42,2040	0 0004 0	INHINT				
05551	REF	16	LAST	244	42,2041	0 4633 0	TC	IBKCALL			
05552	REF	2	LAST	194	42,2042	13207 0	CADR	MASSPROP	UPDATE IXX, IAVG, IAVG/TLX		
055525					42,2043	0 0003 1	RELINT				
0556	REF	31	LAST	248	42,2044	0 4555 0	TC	BANKCALL			
0557	REF	1			42,2045	40277 1	CADR	S40.14	COMPUTE RCS DAP STUFF		
0558	REF	1			42,2046	3 2057 1	DONQUN46	CAP	V0646	R1	R2
0559	REF	32	LAST	248	42,2047	0 4555 0	TC	BANKCALL		PTRIM	YTRIM
0560	REF	7	LAST	248	42,2050	20465 1	CADR	GOXDSPP			R3 BLANK
0561	REF	12	LAST	248	42,2051	0 5423 1	TC	ENDEXT			
0562	REF	13	LAST	248	42,2052	0 5423 1	TC	ENDEXT			
0563	REF	3	LAST	248	42,2053	0 2046 1	TC	DONQUN46			
0564	REF	6	LAST	233	42,2054	0 5435 0	MAXIN	TC	UPFLAG		
0565	REF	2	LAST	247	42,2055	00212 0		ADRES	MAXDBFLG		
0566	REF	1			42,2056	0 2020 1		TC	MAXOUT		
05661					42,2057	01460 1	V0646	VN	0646		
056611					42,2060	01457 0	V06N47	VN	0647		
056612					42,2061	01056 0	V04N46	VN	0446		
05662					43,2546			BANK	43		
05664	REF	2	LAST	230	43,2000			SETLOC	EXTVERBS		
05666					43,2546			BANK			
0570	REF	4	LAST	247 TO 247'	6	325*		COUNT*	\$\$/EXTVB		
R0571				V62PERF	VERB 62			DESCRIPTION			
R0572								REQUEST ORBIT PARAMETERS DISPLAY (R30)			
R0574				1. IF AVERAGE G IS OFF							
R0575				FLASH DISPLAY V04N06. R2 INDICATES WHICH SHIP'S STATE VECTOR IS							
R0576				TO BE UPDATED. INITIAL CHOICE IS THIS SHIP (R2=1). ASTRONAUT							
R0577				CAN CHANGE TO OTHER SHIP BY V22EXE, WHERE X NOT EQ 1.							
R0578				SELECTED STATE VECTOR UPDATED BY THISPREC (OTHPREC).							
R0579				CALLS SR30.1 (WHICH CALLS TFFCONMU + TFFRP/RA) TO CALCULATE							



L EXTENDED VERBS

USER=3 PAGE NO. 20 E6 S4

R0580 RPER (PERIGEE RADIUS), RAPO (APOGEE RADIUS), HPER (PERIGEE
R0581 HEIGHT ABOVE LAUNCH PAD OR LUNAR LANDING SITE), HAPO (APOGEE
R0582 HEIGHT AS ABOVE), TPER (TIME TO PERIGEE), TPF (TIME TO
R0583 INTERSECT 300 KFT ABOVE PAD OR 35KFT ABOVE LANDING SITE).
R0584 FLASH MONITOR V16N44 (HAPO, HPER, TPF). TPF IS -59MS9S IF IT WAS
R0585 NOT COMPUTABLE, OTHERWISE IT INCREMENTS ONCE PER SECOND.
R0586 ASTRONAUT HAS OPTION TO MONITOR TPER BY KEYING IN N 32 E.
R0587 DISPLAY IS IN KMS, IS NEGATIVE (AS WAS TPF), AND INCREMENTS
R0588 ONCE PER SECOND ONLY IF TPF DISPLAY WAS -59MS9S.

R0589 2. IF AVERAGE G IS ON
R0590 CALLS SR30.1 APPROX EVERY TWO SECS. STATE VECTOR IS ALWAYS
R0591 FOR THIS VEHICLE. V82 DOES NOT DISTURB STATE VECTOR. RESULTS
R0592 OF SR30.1 ARE RAPO, RPER, HAPO, HPER, TPER, TPF.
R0593 FLASH MONITOR V16N44 (HAPO, HPER, TPF).
R0594 IF MODE IS P11, THEN CALL DELRSPL SO ASTRONAUT CAN MONITOR
R0595 RESULTS BY N50E. SPLASH COMPUTATION DONE ONCE PER TWO SECS.
R05951 ADDENDUM' HAPO AND HPER SHOULD BE CHANGED TO READ HAPOX AND HPERX IN THE
R05952 ABOVE REMARKS.

0598	REF	9	LAST	247	43,2548	0 2078 1	V82PERF	TC	TESTXACT
0597	REF	1			43,2547	3 4758 1		CAP	PRIOT
0598	REF	2	LAST	247	43,2550	0 5103 0		TC	PRIORNG
0599	REF	11	LAST	245	43,2551	0 4574 0		TC	POSTJUMP
0800	REF	1			43,2552	46332 1		CADR	V82CALL

***** V82CALL MUST NOT BE A PINDVAC JOB.

R0601 VB83PERF VERB 83 DESCRIPTION
R0602 REQUEST RENDEZVOUS PARAMETER DISPLAY (R31)
R0603 1. SET EXT VERB DISPLAY BUSY FLAG.
R0604 2. SCHEDULE V83CALL WITH PRIORITY 10.
R0605 A. DISPLAY
R0606 R1 RANGE
R0607 R2 RANGE RATE
R0608 R3 THETA

0609	REF	10	LAST	249	43,2553	0 2078 1	V83PERF	TC	TESTXACT
0610					43,2554	0 0004 0		INHINT	
0611	REF	2	LAST	198	43,2555	4 0105 1		CS	FLAGWRD9
0612	REF	18	LAST	247	43,2556	7 4707 1		MASK	BIT4
0613	REF	3	LAST	249	43,2557	26 105 1		ADS	FLAGWRD9
0614	REF	3	LAST	222	43,2560	3 4754 0		CAP	PRIOS
0615	REF	7	LAST	245	43,2581	0 5027 1		TC	NOVAC
0616	REF	4	LAST	202	E4,1770			ERANK=	SUBEXIT
0617	REF	1			43,2582	03150 0		2CADR	R31CALL
0617	REF	1			43,2583	72084 0			
0618	REF	5	LAST	246	43,2584	0 5112 0		TC	ENDOFJOB

SET R31 FLAG-BIT 4 FLAGWRD9



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 250

L EXTENDED VERBS

USER'S PAGE NO. 21 E6 S4

0619	REP	11	LAST	249	43,2565	0	2076	1	V85PERP	TC	TESTXACT
0620					43,2566	0	0004	0		INHINT	
0621	REP	19	LAST	249	43,2567	4	4707	1		CS	BIT4
0622	REP	4	LAST	249	43,2570	7	0105	1		MASK	FLAGREDg
0623	REP	5	LAST	250	43,2571	54	105	1		TS	FLAGREDg
0624	REP	2	LAST	231	43,2572	0	2560	0		TC	V83PERP +5

RESET R31 FLAG TO INDICATE R34



L EXTENDED VERBS

USER'S PAGE NO. 22 E6 54

P0825 GOTOR21 VERB 57
R0826 GOTOR23- VERB 54 DESCRIPTION
R0827 SET UP MARKING FOR R22(REND TRACK DATA PROC)
R0828 1. SET EXT VERB DISPLAY BUSY FLAG
R0829 2. IF REND (P20 RUNNING) + TRACK (TRACKING ALLOTTED) FLAGS ARE SET,
R0830 SCHEDULE R21 OR R23 WITH PRIORITY 16, OTHERWISE TURN ON ALARM 406
R0831 3. RELEASE EXT VERB DISPLAY SYSTEM

0832	REP	9	LAST	247	43,2573	0 5447 0	GOTOR21	TC	DOWNFLAG	CLEAR R23FLG
0833	REP	1			43,2574	00025 0		ADRES	R23FLG	BIT 9 FLAG 1
0834					43,2575	0 2600 0		TC	+3	
0835	REP	7	LAST	248	43,2576	0 5435 0	GOTOR23	TC	UPFLAG	SET R23FLG
0836	REP	2	LAST	251	43,2577	00025 0		ADRES	R23FLG	BIT 9 FLAG 1
0837	REP	12	LAST	250	43,2600	0 2076 1		TC	TESTACT	
0838	REP	8	LAST	199	43,2601	3 0074 1		CA	FLAGWRD0	VB 57 UNACCEPTABLE UNLESS BOTH
0839	REP	24	LAST	220	43,2602	7 4704 1		MASK	BIT7	RENDEZVOUS AND TRACK FLAGS ON
0840					43,2603	0 0006 1		EXTEND		
0841	REP	1			43,2604	1 2627 1		BZF	R22ALARM	
0842	REP	7	LAST	197	43,2605	3 0075 0		CA	FLAGWRD1	
0843	REP	14	LAST	244	43,2606	7 4706 0		MASK	BITS	
0844					43,2607	0 0006 1		EXTEND		
0845	REP	2	LAST	251	43,2610	1 2627 1		BZF	R22ALARM	
0846	REP	6	LAST	251	43,2611	3 0075 0		CA	FLAGWRD1	TEST R23FLG
0847	REP	17	LAST	218	43,2612	7 4702 1		MASK	BIT9	
0848					43,2613	0 0006 1		EXTEND		
0849	REP	1			43,2614	1 2622 1		BZF	REGR21	R21
0850	REP	5	LAST	242	43,2615	3 4763 1		CAP	PRI016	
0852	REP	6	LAST	249	43,2616	0 5027 1		TC	NOVAC	
0853	REP	12	LAST	228	E7,1725			BRANK=	MRK(RUP1	
0854	REP	1			43,2617	02447 1		2CADR	R23CSM	
0854	REP	1			43,2620	76067 1				
0855	REP	6	LAST	249	43,2621	0 5112 0		TC	ENDOFJOB	
0856	REP	6	LAST	251	43,2622	3 4763 1	REGR21	CAP	PRI016	
0858	REP	9	LAST	251	43,2623	0 5027 1		TC	NOVAC	
0859	REP	13	LAST	251	E7,1725			BRANK=	MRK(RUP1	
0860	REP	1			43,2624	02445 0		2CADR	R21CSM	
0860	REP	1			43,2625	76067 1				
0861	REP	7	LAST	251	43,2626	0 5112 0		TC	ENDOFJOB	
0862	REP	20	LAST	236	43,2627	0 5537 0	R22ALARM	TC	ALARM	VERB 57 WAS SELECTED AND NEITHER REND
0863					43,2630	00406 0		OCT	00406	NOR TRACK FLAG WERE ON.
0864	REP	14	LAST	246	43,2631	0 5423 1		TC	ENDEXT	



L EXTENDED VERBS

USER=8 PAGE NO. 23 E6 S4

				VERB 66	DESCRIPTION		
P0665					V66 IS TO R23 AS MARK REJECT IS TO R21		
R0666					V66 IS THE MARK REJECT FOR R23 (THE BACKUP MARKING ROUTINE)		
R0667							
0668	REF	14	LAST	251	E7,1725	EBANK=	MRKBUF1
0669	REF	1			43,2632 3 4753 1	V66PERP	CAP
0670	REF	11	LAST	247	43,2633 56 003 1	XCH	EBANK
0671	REF	6	LAST	224	43,2634 3 7718 0	CA	NEGONE
0672	REF	15	LAST	252	43,2635 55=725 1	TS	MRKBUF1
0673	REF	12	LAST	245	43,2636 0 2121 1	TC	GOPIN

BACKUP MARK REJECT (R23)

USER'S PAGE NO. 24 E7 S4

0704.	REF	25	LAST	251	43,2637	3 4704 0	TRACKTRM	CA	BITT		IS REND FLAG ON
0705	REF	9	LAST	251	43,2640	7 0074 0		MASK	FLAGWRD0		
0706					43,2641	0 0008 1		EXTEND			
0707	REF	13	LAST	252	43,2642	1 2121 0		BZF	GOPIN	NO	
0708	REF	10	LAST	251	43,2643	0 5447 0		TC	DOWNFLAG		
0709	REF	1			43,2644	00010 0		ADRES	RNDVZFLG		
0710	REF	15	LAST	251	43,2645	3 4706 1		CA	BITS		IS TRACK FLAG ON
0711	REF	9	LAST	251	43,2646	7 0075 1		MASK	FLAGWRD1		
0712					43,2647	0 0008 1		EXTEND			
0713	REF	14	LAST	253	43,2650	1 2121 0		BZF	GOPIN	NO	
0714	REF	11	LAST	253	43,2651	0 5447 0		TC	DOWNFLAG		
0715	REF	1			43,2652	00031 0		ADRES	TRACKFLG		
07151	REF	12	LAST	253	43,2653	0 5447 0		TC	DOWNFLAG		
07152	REF	1			43,2654	00027 1		ADRES	UPDATFLG		
0716	REF	13	LAST	253	43,2655	0 5447 0		TC	DOWNFLAG		
0717	REF	2	LAST	197	43,2656	00007 0		ADRES	IMUSE		
07173	REF	7	LAST	247	43,2657	3 4752 0		CAP	ERANK6		
07174	REF	12	LAST	252	43,2660	54 003 0		TS	ERANK		
071749					43,2661	0 0004 0		INHINT			
07175	REF	33	LAST	248	43,2662	0 4555 0		TC	BANKCALL		
07176	REF	3	LAST	196	43,2663	45245 0		CADR	STOPRATE		
07177	REF	9	LAST	252	43,2664	3 7716 0		CAP	NEGGONE		
07178	REF	20	LAST	236	43,2665	55*303 1		TS	OPTIND		
0716	REF	2	LAST	195	43,2666	0 6006 1		TC	INTPRET		
0719					43,2667	77624 1		CALL			
0720	REF	3	LAST	204	43,2670	27371 1			INSTALL	DONT INTERRUPT INTEGRATION	
0721					43,2671	77776 1		EXIT			



L EXTENDED VERBS

USER'S PAGE NO. 25 ET 54

0722	REF	1		43,2672	0 5281 1	TC	2PHSCNG		
0723				43,2673	00002 0	OCT	2		
0724				43,2674	00001 0	OCT	1		
KILL GROUP 2 TO HALT P20 ACTIVITY ALSO KILL GROUP 1									
0725				43,2675	0 0004 0	CLEANOUT	INHINT		
0726	REF	12	LAST	249	43,2676	0 4574 0	TC	POSTJUMP	
0727	REF	2	LAST	185	43,2677	12841 1	CADR	ENENA	
R0728			LENWEC	VERB 80		DESCRIPTION		CAUSE RESTART	
R0729			UPDATE LEM STATE VECTOR						
R0730			RESET VERUPFLG TO 0						
0731	REF	14	LAST	253	43,2700	0 5447 0	LENWEC	TC DOWNFLAG	
0732	REF	1			43,2701	00028 0	ADRES	VERUPFLG	
VERUPFLG DOWN INDICATES LEM									
0733	REF	15	LAST	253	43,2702	1 2121 0	TCF	GOPIN	
R0734			CSWEC	VERB 81		DESCRIPTION			
R0735			UPDATE CSM STATE VECTOR						
R0736			SET VERUPFLG TO 1						
0737	REF	8	LAST	251	43,2703	0 5435 0	CSWEC	TC UPFLAG	
0738	REF	2	LAST	254	43,2704	00028 0	ADRES	VERUPFLG	
VERUPFLG UP INDICATES CM.									
07383	REF	16	LAST	254	43,2705	1 2121 0	TCF	GOPIN	
R0749			DNEDUMP	VERB 74		DESCRIPTION			
R0750			INITIALIZE DOWN-TELEMETRY PROGRAM FOR ERASABLE MEMORY DUMP.						
R0751			1. SET EXT VERB DISPLAY BUSY FLAG.						
R0752			2. REPLACE CURRENT DOWNLIST WITH ERASABLE MEMORY.						
R0753			3. RELEASE EXT VERB DISPLAY.						
0754					0010		BRANK= 10		
0758	REF	1			43,2706	3 2711 1	DNEDUMP	CAP LNDUMPI	
0757	REF	2	LAST	188	43,2707	54 335 0	TS	DNIMCOTO	
0756	REF	17	LAST	254	43,2710	0 2121 1	TC	GOPIN	
0759	REF	2	LAST	230	43,2708		V74	EQUALS DNEDUMP	
0760	REF	1			43,2711	03543 0	LNDUMPI	REMA DR DNDUMPI	
R0781			LPTFLGON	VERB 75		DESCRIPTION			
R0782			SET LIFT-OFF FLAG						
R0783			1. SETUP GGRKFLG, GUIDANCE REFERENCE RELEASE BACK-UP FLAG.						
R0784			2. RETURN VIA PINBRNCH						
0765	REF	9	LAST	254	43,2712	0 5435 0	LPTFLGON	TC UPFLAG	
0766	REF	1			43,2713	00125 1	ADRES	GGRKFLG	
VB 75 - SET LIFTOFF FLAG BIT BIT 5 FLAG 5									



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 20211111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 255

L EXTENDED VERBS

USER'S PAGE NO. 28 E0 84

0767	REP	18	LAST	254	43,2714	0 2121 1	TC	GOPIN
0768	REP	5	LAST	197	43,2715	3 1011 0	CHKPOOH	CA MODREG
0769					43,2716	0 0006 1		EXTEND
0770	REP	3	LAST	238	43,2717	1 6711 1	BZF	TCQ
0771	REP	15	LAST	247	43,2720	1 2120 1	TCF	ALM/END
0772					43,2721	0 0006 1	EXDAPOFF	EXTEND
0773	REP	1			43,2722	3 2731 0	DCA	IDLECADR
0774	REP	4	LAST	183	43,2723	53=313 0	DXCH	TSLOC
0775	REP	7	LAST	247	43,2724	4 4105 0	CS	OCT80000
0776	REP	8	LAST	247	43,2725	7 0102 0	MASK	FLAGWRD8
0777	REP	9	LAST	255	43,2726	54 102 0	TS	FLAGWRD8
0778	REP	29	LAST	244	43,2727	0 0002 0	TC	Q
0779	REP	10	LAST	211	E6,1425		ERANK=	PACTOFF
0780	REP	3	LAST	199	43,2730	03143 1	IDLECADR	2CADR TS IDLOC
0780					43,2731	12106 0		

SET TS TO IDLE.

RESET DAPBITS 1 AND 2.

L EXTENDED VERBS

USER'S PAGE NO. 27 E0 S4

P0781 VERB 89 DESCRIPTION RENDEZVOUS FINAL ATTITUDE ROUTINE (R83)

R0782 CALLED BY VERB 89 ENTER DURING P00. PRIO 10 USED. CALCULATES AND
R0783 DISPLAYS FINAL GIMBAL ANGLES TO POINT CSM +X AXIS OR PREFERRED AXIS
R0784 (UNIT(Z)COS55 DEG + UNIT(X)SIN55 DEG) AT LM.

R0785 1. KEY IN V 89 E ONLY IF IN PROG 00. IF NOT IN P00, OPERATOR ERROR AND
R0786 EXIT R83, OTHERWISE CONTINUE.

R0787 2. IF IN P00, DO IMU STATUS CHECK (R02BOTH). IF IMU ON AND ITS
R0788 ORIENTATION KNOWN TO CGC, CONTINUE.

R0789 3. FLASH DISPLAY V 04 N 08. R2 INDICATES WHICH SPACECRAFT AXIS IS TO
R0790 BE POINTED AT LM. INITIAL CHOICE IS PREFERRED AXIS. (R2=1).
R0791 ASTRONAUT CAN CHANGE TO (+X) AXIS (R2 NOT= 1) BY V 22 E 2 E. CONTINUE
R0792 AFTER KEYING IN PROCEED.

R0793 4. SET PREFERRED ATTITUDE FLAG ACCORDING TO OPTION DESIRED. SET FLAG
R0794 FOR PREFERRED AXIS. RESET FLAG FOR X AXIS.

R0795 5. CURRENT TIME IS STORED AND R83COMP IS CALLED

R0798 R83COMP JOB

R0797 UPDATES CSM AND LM STATE VECTORS USING CONIC EQUATIONS

R0798 CALCULATES BOTH PREFERRED AND X AXIS TRACKING ATT FROM CSM TO LM.

R0799 DESIRED GIMBAL ANGLES AS INDICATED BY PREFERRED ATTITUDE FLAG
R0800 ARE STORED FOR LATER R80CSM CALL.

R0801 6. FLASH DISPLAY V 08 N18 AND AWAIT RESPONSE.

R0802 7. RECYCLE- RETURN TO STEP 5.

R0803 TERMINATE- EXIT R83 ROUTINE

R0804 PROCEED- RESET 3AXISFLG AND CALL R80CSM FOR ATTITUDE MANEUVER.

0805	REF	5	LAST	248	43,2732	0	2715	0	V89PERF	TC	CHKPOCH
0806	REF	13	LAST	251	43,2733	0	2078	1		TC	TESTXACT
0807					43,2734	0	0004	0			INHINT
0808	REF	3	LAST	247	43,2735	3	4878	1		CAP	PRIO10
0809	REF	7	LAST	248	43,2738	0	5042	1		TC	FINDVAC
0810	REF	2	LAST	88	E4,1715					EBANK=	P21TIME
0811	REF	1			43,2737	0	3801	0		2CADR	V89CALL
0811	REF	1			43,2740	7	0084	1			
0812	REF	8	LAST	251	43,2741	1	5112	1		TCF	ENDOFJOB

DEMAND P00

0813					43,2742	0	0004	0	WMATRXNG	INHINT
0814	REF	28	LAST	228	43,2743	4	4712	0		CS

VB 86 - CLEAR RENDWPLG TO REINITIALIZE
W-MATRIX



L EXTENDED VERBS

USER=3 PAGE NO. 26

E0 S4

0815	REP	4	LAST	244	43,2744	7 0101 0	MASK	FLAGWRD5
0816	REP	5	LAST	257	43,2745	54 101 0	TS	FLAGWRD5
08164	REP	15	LAST	254	43,2746	0 5447 0	TC	DOWNFLAG
08166	REP	2	LAST	203	43,2747	00086 1	ADRES	ORAWFLAG
0817	REP	19	LAST	255	43,2750	0 2121 1	TC	GOP IN
0818	REP	1			43,2751		00SHOSUM	EQUALS SHOWSUM
0819	REP	6	LAST	256	43,2751	0 2715 0	SHOWSUM	TC CRKPOOH
0820	REP	14	LAST	256	43,2752	0 2078 1	TC	TESTXACT
0821	REP	1			43,2753	3 4712 1	CAP	S+1
0822	REP	2	LAST	80	43,2754	55=378 0	TS	SKEEP6
0823	REP	1			43,2755	3 4714 1	CAP	S+ZERO
0824	REP	3	LAST	179	43,2756	55=362 0	TS	SMODE
0825	REP	1			43,2757	3 3243 1	CA	SELFADRS
0826	REP	3	LAST	188	43,2760	55=361 0	TS	SELFRET
0827	REP	1			43,2761	0 3520 0	TC	STSHOSUM
0828	REP	2	LAST	80	43,2762	23=372 0	SDISPLAY	LXCH SKEEP2
0829	REP	2	LAST	80	43,2763	23=373 1	LXCH	SKEEP3
0830	REP	1			43,2764	3 3242 0	NQKILL	CA ADRS1
0831	REP	32	LAST	240	43,2765	54 156 1	TS	MPAC +2
0832	REP	1			43,2766	3 2777 1	CA	VNCON
0833	REP	34	LAST	253	43,2767	0 4555 0	TC	BANKCALL
0834	REP	8	LAST	248	43,2770	20465 1	CADR	GOMDSP
0835					43,2771	0 2774 1	TC	+3
0836	REP	1			43,2772	0 3631 0	TC	NXTBNK
0837	REP	1			43,2773	0 2764 0	TC	NQKILL
08375	REP	2	LAST	257	43,2774	3 3243 1	CA	SELFADRS
08378	REP	2	LAST	60	43,2775	55=371 1	TS	SKEEP1
0838	REP	15	LAST	251	43,2778	0 5423 1	TC	FNDEXT
0839					43,2777	01201 0	VNCON	VN 501
0840	REP	3	LAST	257	43,3000	3 1378 1	ENDSUMS	CA SKEEP6
0841					43,3001	0 0008 1	EXTEND	
0842	REP	2	LAST	189	43,3002	1 3334 1	BZF	SELFCHK
0843	REP	2	LAST	257	43,3003	0 3520 0	TC	STSHOSUM
R0844	VERB	79	REQUEST LUNAR LANDMARK SELECTION. RESTRICTED TO POO.					
0845	REP	7	LAST	257	43,3004	0 2715 0	CALLR35	TC CRKPOOH
0846	REP	15	LAST	257	43,3005	0 2078 1	TC	TESTXACT
0847	REP	4	LAST	249	43,3008	3 4754 0	CAP	PRIOS
0849	REP	8	LAST	256	43,3007	0 5042 1	TC	PINDVAC
0850	REP	2	LAST	86	E4,1725		ERANK=	KLOOCPNT
0851	REP	1			43,3010	03215 1	ZCADR	LNDMKSEL
0851	REP	1			43,3011	62084 1		

RESET ORBFLAG

*
*
* SHOWSUM OPTION
*
* TURN OFF SELF-CHECK
*
*
* ENTER ROPECHK

* BNK NO FOR DSP
* BUGGER WORD FOR DSP
*
*
* 0501
*
*
*
*

*

*

*

* ROPECHK, START SELFCHK AGAIN.
* START SHOWSUM AGAIN.

L EXTENDED VERBS

USER'S PAGE NO. 29 E0 34

0852 REF 9 LAST 256 43,3012 0 5112 0 TC ENDOFJOB R35 WILL DO ENEXT

R0853 VB 76 SET PREFERRED ATTITUDE FLAG - DRIVE TO PREFERRED.

0854 REF 10 LAST 254 43,3013 0 5435 0 SETPRFLG TC UPFLAG

0855 REF 1 43,3014 00120 1 ADRES PRPTRCAT BIT 10 FLAG 5

0856 REF 20 LAST 257 43,3015 0 2121 1 TC GOPIN

R0857 VB 77 RESET PREFERRED ATTITUDE FLAG - DRIVE TO +X-AXIS ATT.

0858 REF 16 LAST 257 43,3016 0 5447 0 RESETPRF TC DOWNFLAG

0859 REF 2 LAST 258 43,3017 00120 1 ADRES PRPTRCAT BIT 10 FLAG 5

0860 REF 21 LAST 258 43,3020 0 2121 1 TC GOPIN

R0861 VB 87 SET VHF RANGE FLAG - ALLOWS R22 TO ACCEPT RANGE DATA.

0862 REF 3 LAST 253 43,3021 0 6006 1 SETVHFLG TC INTPRET

0863 43,3022 77414 0 SET EXIT

0864 REF 2 LAST 195 43,3023 04466 1 VHFPRFLAG

0865 REF 22 LAST 258 43,3024 0 2121 1 TC GOPIN

R0866 VB 68 RESET VHF RANGE FLAG - STOPS ACCEPTANCE OF RANGE DATA.

0867 REF 4 LAST 258 43,3025 0 6006 1 RESETVHF TC INTPRET

0868 43,3026 77414 0 CLEAR EXIT

0869 REF 3 LAST 258 43,3027 04666 0 VHFPRFLAG

08695 REF 1 43,3030 0 5520 0 TC TRFAILOR TRACKER FAIL LIGHT

0870 REF 23 LAST 258 43,3031 0 2121 1 TC GOPIN

R0871 VERB 66. VEHICLES ARE ATTACHED. - MOVE THIS VEHICLE STATE VECTOR TO

R0872 OTHER VEHICLE STATE VECTOR.

R0873 USE SUBROUTINE GENTRAN.

0874 REF 1 E3,1554 EHANK= RRECTHIS

0875 REF 4 LAST 256 43,3032 3 4676 1 ATTACHED CAP PRIO10

0876 REF 9 LAST 257 43,3033 0 5042 1 TC FINDVAC

08761 REF 2 LAST 256 E3,1554 EHANK= RRECTHIS

08762 REF 1 43,3034 03037 0 2CADR ATTACHIT

08762 REF 1 43,3035 66103 0

08763 REF 10 LAST 258 43,3036 0 5112 0 TC ENDOFJOB

0877 REF 5 LAST 258 43,3037 0 6006 1 ATTACHIT TC INTPRET

0878 43,3040 77624 1 CALL

0879 REF 4 LAST 253 43,3041 27371 1 INTSTALL



L - EXTENDED VERBS

USER PAGE NO. 30 E3 S4

08791				43,3042	43014 0	SET	RON	
08792	REF	1		43,3043	04064 1		MOONOTH	
08793	REF	1		43,3044	04303 0		MOONTHIS	
08794				43,3045	67050 0		+3	
08795				43,3046	77614 1	CLEAR		
08796	REF	2	LAST	259	43,3047	04264 0	MOONOTH	
0880				43,3050	77776 1	EXIT		
0881	REF	1		43,3051	3 3078 0	CAP	OCT51	
0882	REF	5	LAST	222	43,3052	0 5475 1	TC	GENTRAN
0883	REF	3	LAST	258	43,3053	01554 1	ADRES	RRECTHIS
0884	REF	1		43,3054	01628 1	ADRES	RRECTOTH	

OUR STATE VECTOR INTO OTHER VIA GENTRAN

08845				43,3055	0 0003 1	TACHEXIT	RELINT	
088455	REF	6	LAST	258	43,3058	0 8008 1	TC	INTPRET
088457				43,3057	77824 1	CALL		
088459	REF	1		43,3080	26662 1		PTOACSM	
088461				43,3061	45154 0	LXA,2	CALL	
088463	REF	2	LAST	87	43,3062	02150 1	PBODY	
088465	REF	1		43,3083	20237 0		SVDWN1	
088467				43,3064	77624 1	CALL		
088469	REF	1		43,3065	20283 1		SVDWN2	
088471				43,3066	77776 1	EXIT		

UPDATE RN, VN, R-OTHER, V-OTHER

0885	REF	1		43,3067	3 3077 1	CAP	TCPINAD	
0886	REF	1		43,3070	50 120 1	INDEX	FIXLOC	
0887	REF	7	LAST	227	43,3071	54 052 1	TS	OPRET
0888	REF	13	LAST	254	43,3072	0 4574 0	TC	POSTJUMP
0889	REF	1		43,3073	27406 0	CADR	INTWAKE	

0890				43,3074	77634 0	TCPIN	RTB	
0891	REF	3	LAST	232	43,3075	21176 1		PINBRNCH
0892				43,3076	00051 0	OCT51	OCT	51
0893	REF	1		43,3077	87074 0	TCPINAD	CADR	TCPIN

R089302 VERB 47. MOVE LM STATE VECTOR INTO CM STATE VECTOR.

089304	REF	5	LAST	258	43,3100	3 4676 1	LMTCCMSV	CAP	PRI010
089305	REF	10	LAST	258	43,3101	0 5042 1		TC	PINDVAC
089308	REF	4	LAST	259	E3,1554			ERANK=	RRECTHIS
089307	REF	1			43,3102	03105 0		2CADR	LMTCCM
089307	REF	1			43,3103	88103 0			
089308	REF	11	LAST	258	43,3104	0 5112 0		TC	ENDOFJOB
089309	REF	7	LAST	259	43,3105	0 8008 1	LMTCCM	TC	INTPRET
08931					43,3108	77824 1		CALL	
089312	REF	5	LAST	258	43,3107	27371 1			INTSTALL
089314					43,3110	43014 0		SET	RON
089316	REF	2	LAST	259	43,3111	04063 0			MOONTHIS
089318	REF	3	LAST	259	43,3112	04304 1			MOONOTH

USER'S PAGE NO. 31 E3 S4

LM STATE VECTOR INTO CM VIA GENTRAN

IS V94FLAG SET
NO - OPERATOR ERROR

IS IT P23
NO - OPERATOR ERROR
SET GROUP 2 TO DO R64
CAUSE RESTART

0930 REF 11 LAST 258 43,3146 0 5435 0 VERR96 TC UPFLAG QUITFLAG WILL CAUSE INTEGRATION TO EXIT



L EXTENDED VERBS

USER'S PAGE NO. 32 E3 S4

0931	REP	1		43,3147	00221 0	ADRES	QUITFLAG
0932	REP	23	LAST	240	43,3150 3 4714 1	CAP	ZERO
0933	REP	14	LAST	259	43,3151 0 4574 0	TC	POSTJUMP
0934	REP	1		43,3152	10010 1	CADR	V37
0949	REP	5	LAST	207	E5,1751	EBANK=	LANDMARK
0950	REP	7	LAST	260	43,3153 0 5253 0	TC	CHECKMM
0951				43,3154	00026 0	MM	22
0952	REP	18	LAST	260	43,3155 0 2120 0	TC	ALM/END
09521	REP	1		43,3156	3 3174 0	CAP	LANDBANK
09522	REP	13	LAST	253	43,3157 54 003 0	TS	EBANK
0953	REP	3	LAST	260	43,3160 4 4756 0	CS	PRI07
0954	REP	6	LAST	261	43,3161 7 1751 1	MASK	LANDMARK
0955	REP	7	LAST	261	43,3162 55-751 1	TS	LANDMARK
0956	REP	25	LAST	227	43,3163 3 1330 0	CA	MARKSTAT
0957	REP	1		43,3164	54 021 0	TS	SR
0958	REP	2	LAST	261	43,3165 3 0021 1	CA	SR
0959	REP	3	LAST	261	43,3166 3 0021 1	CA	SR
0960	REP	4	LAST	261	43,3167 7 4756 0	MASK	PRI07
09601	REP	70	LAST	247	43,3170 4 0000 0	CS	A
0961	REP	5	LAST	257	43,3171 6 4754 0	AD	PRI05
0962	REP	8	LAST	261	43,3172 27-751 1	ADS	LANDMARK
0963	REP	24	LAST	258	43,3173 0 2121 1	TC	GOPIN
09631	REP	9	LAST	261	43,3174 02751 0	LANDBANK	ECADR LANDMARK
R2000							
R20001	VERB	67	ASTRONAUT DISPLAY OF W MATRIX				
20002	REP	17	LAST	260	43,3175 0 2076 1	TC	TESTXACT
2001	REP	6	LAST	261	43,3176 3 4754 0	CAP	PRI05
2003	REP	12	LAST	260	43,3177 0 5042 1	TC	FINDVAC
2004	REP	4	LAST	91	E5,1400	EBANK=	W
2005	REP	1		43,3200	03574 1	ZCADR	V67CALL
2005	REP	1		43,3201	60105 0		
2006	REP	13	LAST	260	43,3202 0 5112 0	TC	ENDOFJOB
R2007	VB	44	SET SURFACE FLAG.				
2008	REP	12	LAST	260	43,3203 0 5435 0	TC	UPFLAG
2009	REP	2	LAST	204	43,3204 00177 0	ADRES	SURFFLAG
2010	REP	25	LAST	261	43,3205 1 2121 0	TCF	GOPIN
R2011	VB	45	RESET SURFACE FLAG.				
2012	REP	18	LAST	260	43,3206 0 5447 0	TC	DOWNFLAG
2013	REP	3	LAST	261	43,3207 00177 0	ADRES	SURFFLAG
2014	REP	26	LAST	261	43,3210 1 2121 0	TCF	GOPIN

AT NEXT TIMESTEP

GO TO POO

IS P22 OPERATING

NO

YES SET BITS 12,11,10 OF LANDMARK =
BITS 14,13,12 OF MARKSTAT AFTER
ADDING 1 TO THEM TO GET OFFSET
MARK NO.



ASSEMBLE REVISION 249 OF AGC PROGRAM COLOSSUS BY NASA 2021111-041

20'35 OCT. 28, 1968 KOOLADE .069 PAGE 282

L EXTENDED VERBS

USER'S PAGE NO. 33 E5 S4